

سلسلة كتب الاستاذ



MAIN BOOK

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5th

PRIMARY

FIRST TERM

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Theme 1

Number Sense and Operations



Units of the Theme

Unit 1 Decimal Place Value and Computation

Concept 1.1: Decimals to the Thousandths Place

Concept 1.2: Adding and Subtracting Decimals

Unit 2 Number Relationships

Concept 2.1: Expressions, Equations, and the Real World

Concept 2.2: Factors and Multiples

Unit 3 Multiplication with Whole Numbers

Concept 3.1: Models for Multiplication

Concept 3.2: Multiplying 4-Digit Numbers by 2-Digit Numbers



Unit 1

Decimal Place Value and Computation

Concept

1.1 | Decimals to the Thousandths Place

Lessons 1&2: The Journey Begins / Decimals to the Thousandths Place

Learning Objectives:

By the end of these lessons, the student will be able to:

- Read numbers from the Milliards place to the Hundredths place.
- Identify the value of digits from the Milliards place to the Hundredths place.
- Read decimal numbers to the Thousandths place.
- Write decimal numbers to the Thousandths place.

Lessons 3&4: Place Value Shuffle / Composing and Decomposing Decimals

Learning Objectives:

By the end of these lessons, the student will be able to:

- Explain how a digit changes value as it moves to the left or right in a decimal or whole number.
- Compose and decompose decimals in multiple ways.

Lesson 5: Comparing Decimals

Learning Objectives:

By the end of this lesson, the student will be able to:

- Compare decimals to the Thousandths place.

Lesson 6: Rounding Decimals

Learning Objectives:

By the end of this lesson, the student will be able to:

- Round numbers to the nearest Tenth, Hundredth, or Thousandth.



The Journey Begins
Decimals to the Thousandths Place

Remember

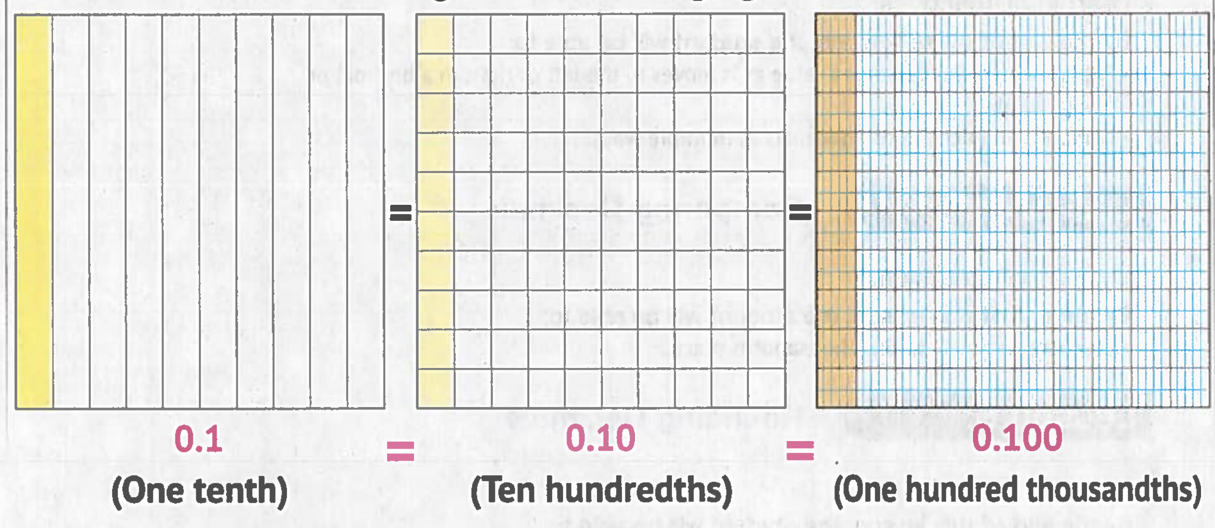
Decimal Fraction

It is a number that represents a value less than 1, but greater than 0.

The whole one can be divided into

Ten equal parts	One hundred equal parts	One thousand equal parts
Each part is called one tenth.	Each part is called one hundredth.	Each part is called one thousandth.
$0.1 = \frac{1}{10}$	$0.01 = \frac{1}{100}$	$0.001 = \frac{1}{1,000}$

Note that: In decimals, zeros can be added to the right of the last non-zero digit without changing the value of the number.



0.1 (One tenth) = 0.10 (Ten hundredths) = 0.100 (One hundred thousandths)

Also: 0.2 = 0.20 = 0.200 , 0.3 = 0.30 = 0.300 ,... and so on.

Decimal Number

- It is a number that represents a value greater than 1.
- The decimal number consists of two parts separated by a decimal point.

Whole number part (integer)
To the left of the decimal point

Decimal parts (decimal fraction)
To the right of the decimal point

357 . 94

It's read as: Three hundred fifty-seven and ninety-four hundredths.

Reading Numbers from One Milliard to Thousandths

Learn To read any decimal:

- Divide the whole number into numerical groups according to the place value table.
- Read the number from the **left**, each number group is followed by its name.
- Read the decimal parts followed by the name of the **last decimal part** on the **right**.

Whole Number										Decimal Point	Decimals		
Milliards	Millions			Thousands			Ones						
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
6	0	0	8	0	4	5	1	7	0	.	1	7	
6 milliard	8 million			45 thousand			170			17 hundredth			

The previous number (6,008,045,170.17) is read as:

Six milliard, eight million, forty-five thousand, one hundred seventy **and** seventeen hundredths.

Note the reading of the following numbers:

a) 2,450.8 is read as: Two thousand, four hundred fifty and eight tenths.

b) 705,012.05 is read as: Seven hundred five thousand, twelve and five hundredths.

c) 5,027.008 is read as: Five thousand, twenty seven and eight thousandths.

d) 63,020.436 is read as: Sixty-three thousand, twenty and four hundred thirty-six thousandths

1 Write the following numbers in standard form:

a) Five thousand, six hundred, ninety-seven **and** five tenths: ....

b) Thirty thousand, fifteen **and** seven hundredths: ....

c) Seven million, two hundred five **and** twenty-nine hundredths: ....

d) seventy-three million, seven thousand **and** thirty-one thousandths:

....

e) Six milliard, five million, one hundred **and** seventy-six thousandths:

....

2 Write the following numbers in word form:

a) 45,231.7: ....

....

b) 125.39: ....

....

c) 20.09: ....

....

d) 63,247.008: ....

....

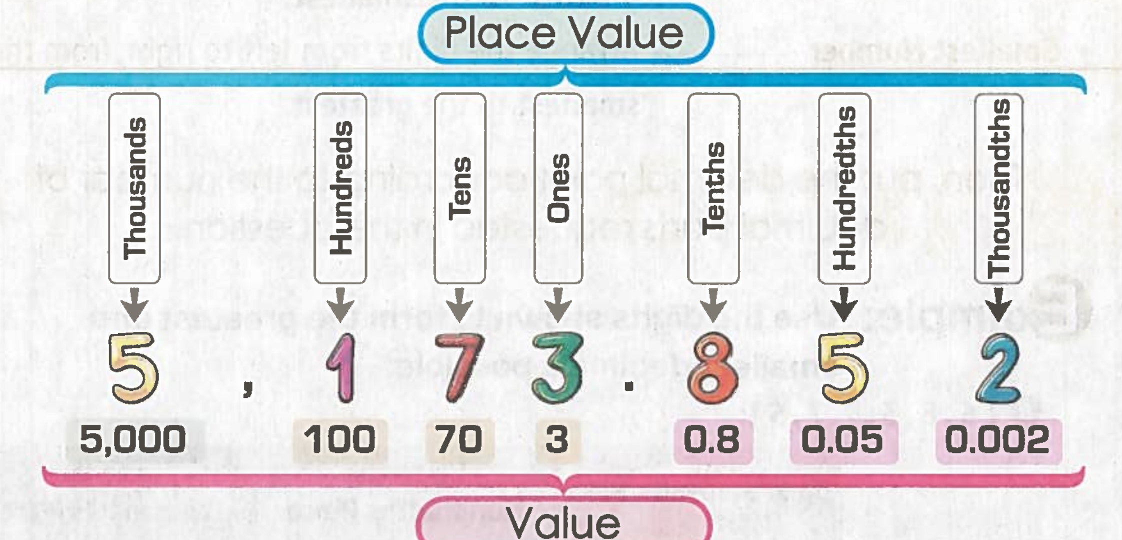
e) 500.609: ....

....

The Value of Digits from One Milliard to One Thousandth

Learn

- The place value and the value of each digit can be observed in the number 495,173.852 as follows:



3 **Complete the following:**

ⓐ In 56,258.96, the digit 9 is in the .... place and its value is ....

ⓑ In 87,022.8, the digit 7 is in the .... place and its value is ....

ⓒ In 605.234, the digit 0 is in the .... place and its value is ....

ⓓ In 2,845.127, the digit 5 is in the .... place and its value is ....

4 **Write the place value and the value of the encircled digit in the following numbers:**

	Number	Place Value	Value
ⓐ	452,207.5(6)	....	....
ⓑ	6,500,(7)39.7	....	....
ⓒ	9,009.00(9)	....	....
ⓓ	(3)7,000,157.128	....	....
ⓔ	80,218.(0)39	....	....



To form the greatest and smallest decimals from given digits:

- **Greatest Number** → Arrange the digits from left to right, from the **greatest** to the **smallest**.
- **Smallest Number** → Arrange the digits from left to right, from the **smallest** to the **greatest**.

Then, put the decimal point according to the number of decimal parts requested in the question.

Example: Use the digits shown to form the **greatest** and **smallest** decimals possible:

ⓐ (6 , 8 , 3 , 2 , 7 , 5):

	Up to the Tenths Place	Up to the Hundredths Place	Up to the Thousandths Place
Greatest Number	87,653.2	8,765.32	876.532
Smallest Number	23,567.8	2,356.78	235.678

ⓑ (9 , 3 , 8 , 5 , 2):

	Up to the Tenths Place	Up to the Hundredths Place	Up to the Thousandths Place
Greatest Number	9,850.2	985.02	98.502
Smallest Number	2,058.9	205.89	20.589

5 Make up the **greatest** and **smallest** decimals of the given digits:

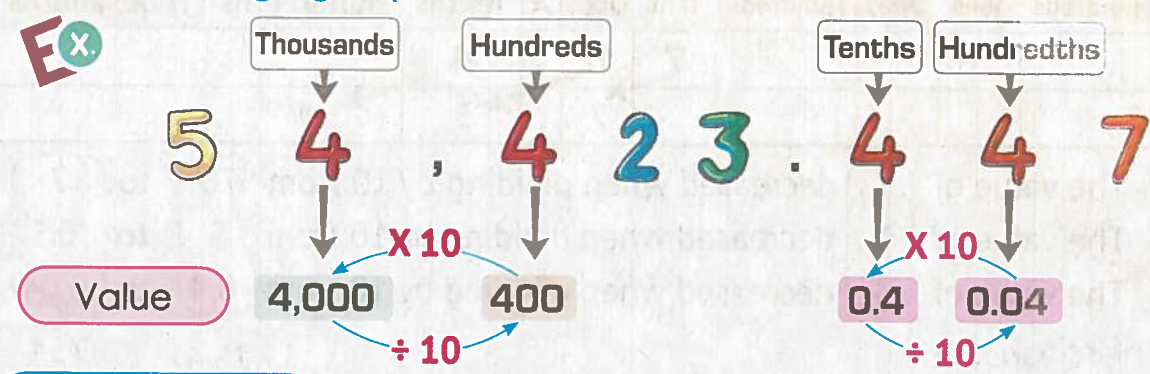
	Digits	The greatest number up to the			The smallest number up to the		
		Tenths	Hundredths	Thousandths	Tenths	Hundredths	Thousandths
ⓐ	6, 5, 7, 8, 3, 2, 4						
ⓑ	8, 3, 0, 7, 4						
ⓒ	3, 2, 8, 7, 3, 5, 0, 7						
ⓓ	9, 3, 2, 5, 3, 7, 4						
ⓔ	6, 2, 4, 3						



Place Value Shuffle
Composing and Decomposing Decimals

Learn The value of the digit changes within the number by changing its place:

Ex.



From above: **The value of the digit:**

- Increases by 10 times **(X 10)** as it moves to the **left**.
- Decreases by 10 times **(÷10)** as it moves to the **right**.

Learn Using the place value charts to solve multiplying and dividing by 10 problems

Example (1): **Use the place value chart to solve the following problem: 75.4 x 10**

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
				7	5	.	4		
			7	5	4				

- The value of 7 increased when multiplying by 10 from 70 to 700
- The value of 5 increased when multiplying by 10 from 5 to 50
- The value of 4 increased when multiplying by 10 from 0.4 to 4

75.4   754

Therefore:

The value of the whole number **75.4** increased when multiplying by **10** from **75.4** to **754, so** 75.4 X 10 = 754.

Example (2): Use the place value chart to solve the following problem: 75.4 ÷ 10 = 7.54

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
				7	5	.	4		
					7	.	5	4	

- The value of 7 decreased when dividing by 10 from 70 to 7
- The value of 5 decreased when dividing by 10 from 5 to 0.5
- The value of 4 decreased when dividing by 10 from 0.4 to 0.04

75.4 754

Therefore:

The value of the whole number **75.4** decreased by a factor of **10** from **75.4** to **7.54**, so 75.4 ÷ 10 = 7.54.

Notes

- When multiplying by **10** ⟶ Move all digits of the number one place to the **left**.
- When dividing by **10** ⟶ Move all digits of the number one place to the **right**.

1 Use the place value charts to solve the following problems. Fill in the blanks to show how the value of each digit has changed:

a 386 X 10

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			

- The value of .... (increased/decreased) when multiplying by **10** from .... to ....
- The value of .... (increased/decreased) when multiplying by **10** from .... to ....
- The value of .... (increased/decreased) when multiplying by **10** from .... to ....
- Therefore, the value of the whole number .... (increased/decreased) when multiplying by **10** from .... to .... , so **386 X 10 =** ....

ⓑ 2.5 X 10

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			

- The value of .... (increased/decreased) when multiplying by **10** from .... to ....
- The value of .... (increased/decreased) when multiplying by **10** from .... to ....
- Therefore, the value of the whole number .... (increased/decreased) when multiplying by **10** from .... to .... , so **2.5 X 10 =** ....

ⓒ 915 ÷ 10

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			

- The value of .... (increased/decreased) when dividing by **10** from .... to ....
- The value of .... (increased/decreased) when dividing by **10** from .... to ....
- The value of .... (increased/decreased) when dividing by **10** from .... to ....
- Therefore, the value of the whole number .... (increased/decreased) when dividing by **10** from .... to .... , so **915 ÷ 10 =** ....

ⓓ 8.7 ÷ 10

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			

- The value of .... (increased/decreased) when dividing by **10** from .... to ....
- The value of .... (increased/decreased) when dividing by **10** from .... to ....
- Therefore, the value of the whole number .... (increased/decreased) when dividing by **10** from .... to .... , **so 8.7 ÷ 10 =** ....

2 Find the result:

ⓐ 254 X 10 = ...

ⓑ 360 ÷ 10 = ...

ⓒ 75.65 x 10 = ...

ⓓ 83.19 ÷ 10 = ...

ⓔ 3.587 X 10 = ...

ⓕ 952.4 ÷ 10 = ...

Decomposing Decimal Numbers in Expanded Forms

Learn Extended form is used to decompose decimals.
Note the following:

ⓐ 0.025 = 0.02 + 0.005

ⓑ 0.25 = 0.2 + 0.05

ⓒ 4721.7 = 4,000 + 700 + 20 + 1 + 0.7

ⓓ 472.17 = 400 + 70 + 2 + 0.1 + 0.07

ⓔ 47.217 = 40 + 7 + 0.2 + 0.01 + 0.007



Decimals can be decomposed in several ways, as in the following example:

14 + 0.25 ← 14.25 → 10 + 4 + .25

14 + 0.2 + 0.05 ← 14.25 → 10 + 4 + 0.2 + 0.05

3 Decompose the following numbers:

ⓐ 34.527 = ... (1st Way: Expanded Form)

= .... (2nd Way)

= .... (3rd Way)

ⓑ 21.045 = ... (1st Way: Expanded Form)

= .... (2nd Way)

= .... (3rd Way)

ⓒ 14.932 = ... (1st Way: Expanded Form)

= .... (2nd Way)

= .... (3rd Way)

ⓓ 231.128 = ...(1st Way: Expanded Form)

= .... (2nd Way)

= .... (3rd Way)

ⓔ 508.17 = ...(1st Way: Expanded Form)

= .... (2nd Way)

= .... (3rd Way)

4 Compose the following numbers:

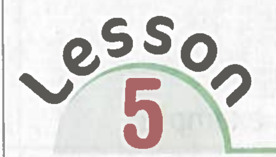
ⓐ 200 + 30 + 0.5 + .007 = ...

ⓑ 60 + 5 + 0.08 + 0.009 = ...

ⓒ 24 + 0.075 = ...

ⓓ 65 + 0.7 + 0.02 + 0.009 = ...

ⓔ 125 + 0.87 = ...



Comparing Decimals

Example: Compere between 85.376 and 85.368, using the following steps:

Step 1	Step 2	Step 3	Step 4
Compare the whole numbers.	Compare the digits in the Tenths place.	Compare the digits in the Hundredths place.	Compare the digits in the Thousandths place.
85.367 ◯ 85.368	85.367 ◯ 85.368	85.367 ◯ 85.368	85.367 < 85.368

If they are equal → *If they are equal* → *If they are equal* →

1 Compare using (<, = or >):

ⓐ 45.057 ◯ 45.100 ⓑ 98.013 ◯ 98.101

ⓒ 50.009 ◯ 50.100 ⓓ 10.1 ◯ 10.011

ⓔ 12.01 ◯ 2.099 ⓕ 34.5 ◯ 34.500

2 Select the greatest number:

ⓐ 1.401 , 1.341 , 1.440 , 1.041 ⓑ 1.055 , 1.3 , 1.28 , 1.045

3 Select the smallest number:

ⓐ 20.09 , 20.1 , 20.001 , 20.011 ⓑ 9.003 , 3.009 , 30.09 , 90.03

4 Arrange the following numbers in an ascending order:

45.21 , 54.12 , 45.12 , 54.21 , 51.24

• .... , ... , ... , ... , ...

5 Arrange the following numbers in a descending order:

2.011 , 21.010 , 12.001 , 100.12 , 10.012

• .... , ... , ... , ... , ...



Rounding Decimals

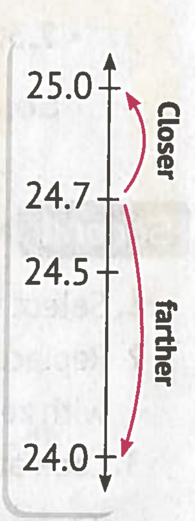
To the Nearest

1 Whole Number	2 Tenth	3 Hundredth	4 Thousandth
Unit	One decimal place	Two decimal places	Three decimal places
Ones	0.1 – $\frac{1}{10}$	0.01 – $\frac{1}{100}$	0.001 – $\frac{1}{1,000}$

Learn

Rounding Strategies

First: ▶ **The Midpoint Strategy:**

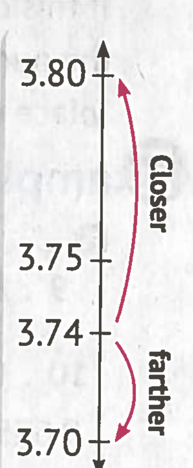


Example: **Round each of the following numbers:**

ⓐ 24.7 (To the nearest whole number)

- The number **24.7** is located between the numbers **24.0** and **25.0**.
- The midpoint between the two numbers is **24.5**.
- **24.7** is closer to **25.0**.

So, 24.7 ≈ 25 (To the nearest whole number)



ⓑ 3.74 (To the nearest Tenth)

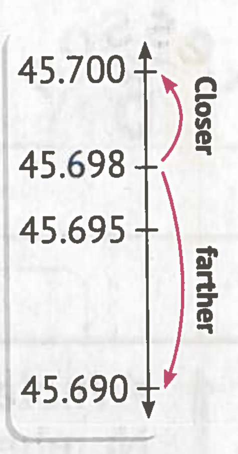
- The number **3.74** is located between the numbers **3.70** and **3.80**.
- The midpoint between the two numbers is **3.75**.
- **3.74** is closer to **3.70**.

So, 3.74 ≈ 3.7 (To the nearest Tenth)

ⓒ **45.698** (To the nearest Hundredth)

- The number **45.698** is located between the numbers **45.690** and **45.700**.
- The midpoint between the two numbers is **45.695**.
- **45.698** is closer to **45.700**.

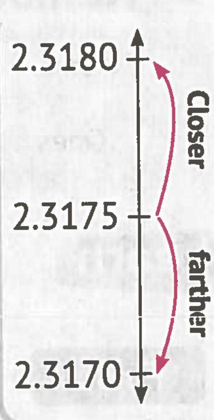
So, 45.698 ≈ 45.70 (To the nearest Hundredth)



ⓓ **2.3175** (To the nearest Thousandth)

- The number **2.3175** is located between the numbers **2.3170** and **2.3180**.
- The midpoint between the two numbers is **2.3175**.
- **2.3175** is located at the midpoint.

So, 2.3175 ≈ 2.318 (To the nearest Thousandth)



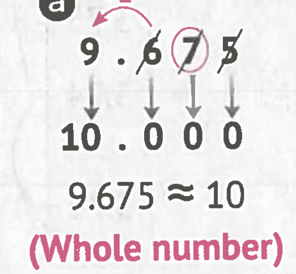
Second: Rounding Rule Strategy:

1. Select the digit in the place to be rounded.
2. Replace the digits in the places that precede the previously selected digit with **zeros**.
3. Look at the digit in the place preceding the place to be rounded directly.

If this digit is 0, 1, 2, 3, or 4, the number of the specified place remains **unchanged**.

If this digit is 5, 6, 7, 8 or 9, we **add 1** to the number of the specified place.

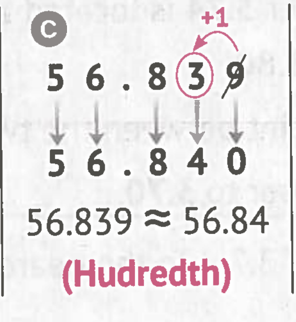
Example: Round the following numbers to the nearest:



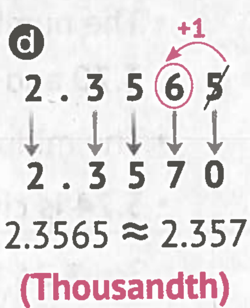
ⓐ 9.675 ≈ 10 **(Whole number)**

ⓑ
6 . 2 4
6 . 2 0

6.24 ≈ 6.2 **(Tenth)**



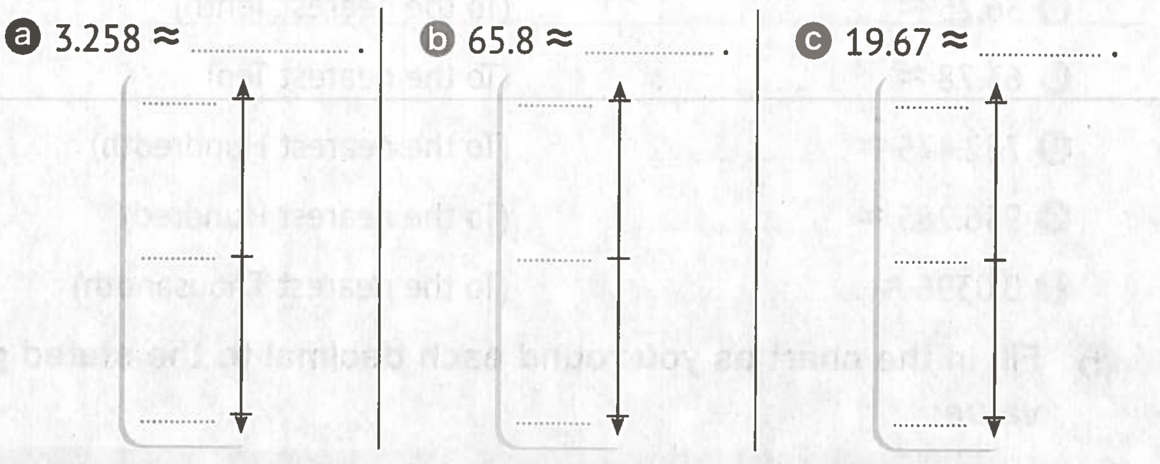
ⓒ 56.839 ≈ 56.84 **(Hudredth)**



ⓓ 2.3565 ≈ 2.357 **(Thousandth)**

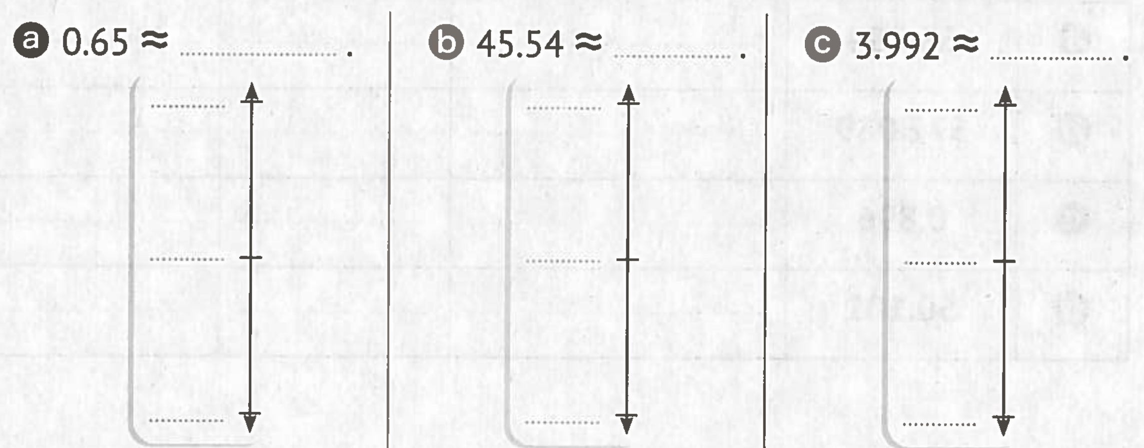
1 Label the midpoint of the number line. Place the given decimal number at its proper location, and then round to the nearest **whole number**:

ⓐ 3.258 ≈ ....   ⓑ 65.8 ≈ ....   ⓒ 19.67 ≈ ....



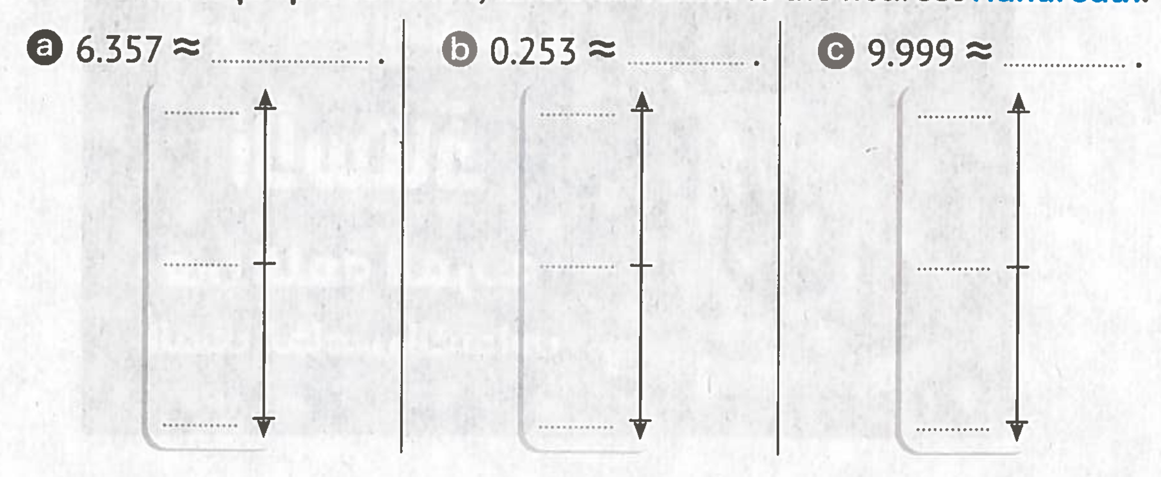
2 Label the midpoint of the number line. Place the given decimal number at its proper location, and then round to the nearest **Tenth**:

ⓐ 0.65 ≈ ....   ⓑ 45.54 ≈ ....   ⓒ 3.992 ≈ ....



3 Label the midpoint of the number line. Place the given decimal number at its proper location, and then round to the nearest **Hundredth**:

ⓐ 6.357 ≈ ....   ⓑ 0.253 ≈ ....   ⓒ 9.999 ≈ ....



4 **Round each of the following numbers:**

ⓐ 753.5 ≈ .... (To the nearest whole number)

ⓑ 56.25 ≈ .... (To the nearest Tenth)

ⓒ 63.78 ≈ .... (To the nearest Ten)

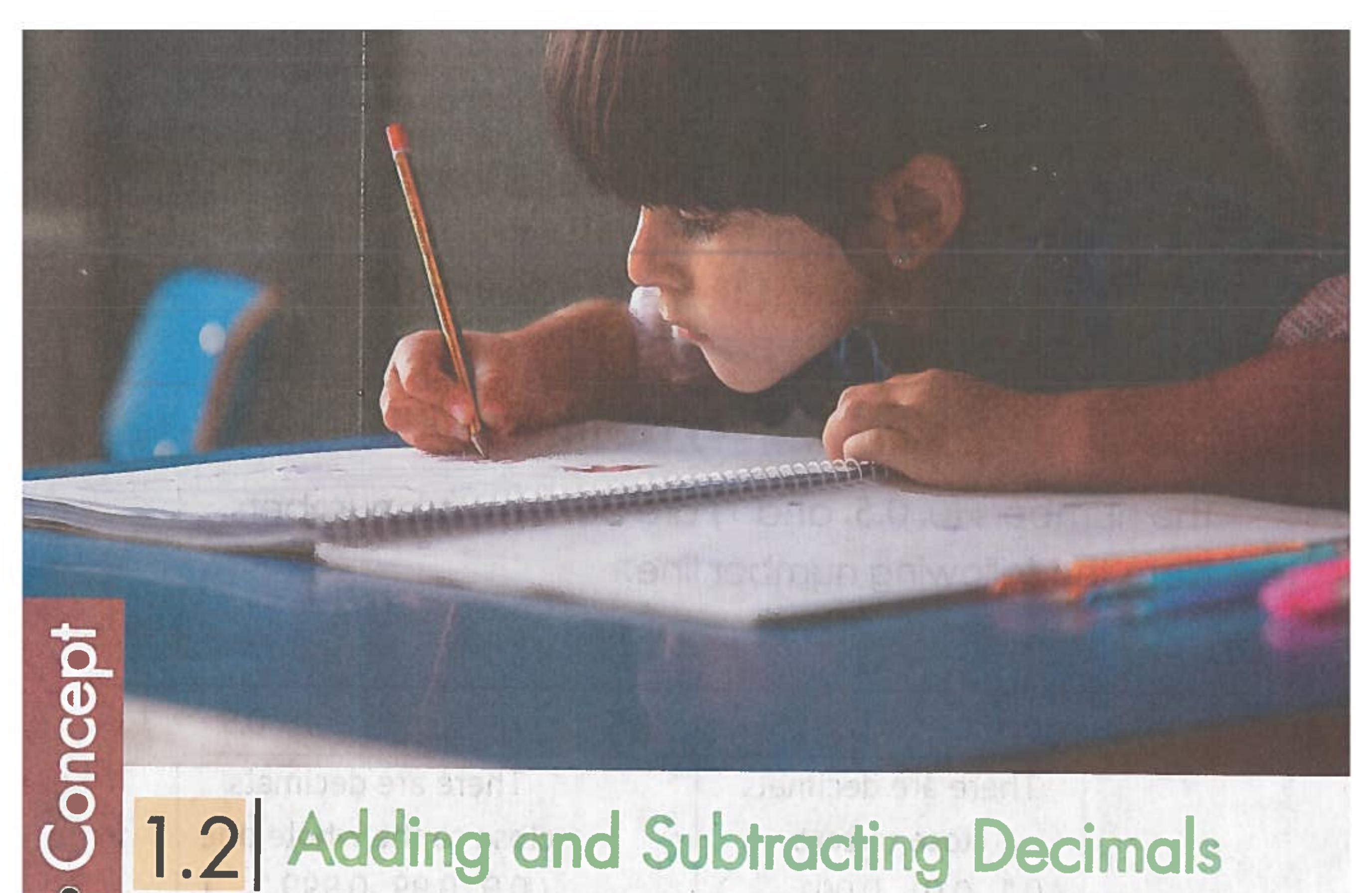
ⓓ 782.475 ≈ .... (To the nearest Hundredth)

ⓔ 956.285 ≈ .... (To the nearest Hundred)

ⓕ 0.0396 ≈ .... (To the nearest Thousandth)

5 **Fill in the chart as you round each decimal to the stated place value:**

	Number	Round to the Nearest Whole Number	Round to the Nearest Tenth	Round to the Nearest Hundredth
ⓐ	56.284	....	....	....
ⓑ	572.089	....	....	....
ⓒ	0.896	....	....	....
ⓓ	50.101	....	....	....



Concept

1.2 | Adding and Subtracting Decimals

Lessons 7-9:

Estimating Decimal Sums
Modeling Decimal Addition
Thinking Like a Mathematician

Learning Objectives:

By the end of these lessons, the student will be able to:

- Estimate sums of decimal numbers.
- Model decimal addition.
- Apply strategies to add decimals to the Thousandths place.
- Check the reasonableness of his/her answers.

Lessons 10-13:

Subtracting Decimals
Estimating Decimal Differences
Subtracting to the Thousandths Place
Decimal Story Problems

Learning Objectives:

By the end of these lessons, the student will be able to:

- Model decimal subtraction.
- Estimate differences of decimal numbers.
- Apply strategies to subtract decimals to the Thousandths place.
- Check the reasonableness of his/her answers.
- Add and subtract decimal numbers to the Thousandths place to solve story problems.



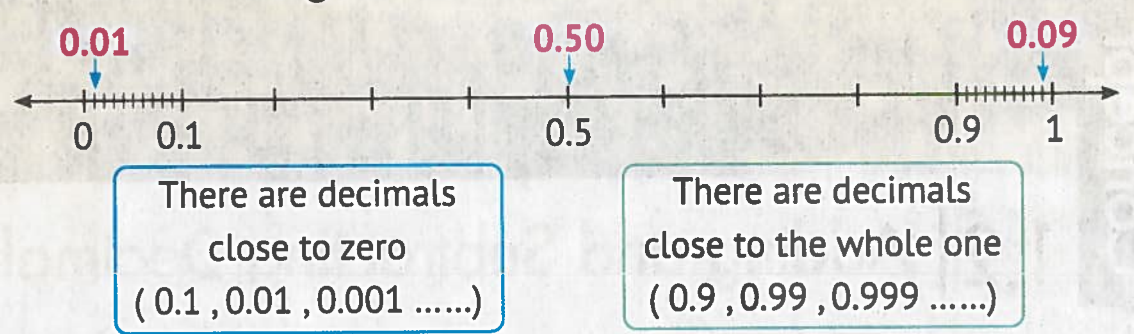
Estimating Decimal Sums
Modeling Decimal Addition
Thinking Like a Mathematician

Learn

Easy Numbers

The numbers (0, 0.5, and 1) are benchmark numbers.

Note the following number line:



There are decimals close to zero (0.1 , 0.01 , 0.001 ......)

There are decimals close to the whole one (0.9 , 0.99 , 0.999 ......)

0 , 0.5 , 1 , 1.5 , ... are called benchmark numbers.

Estimating the Sum of Decimals Using Benchmark Numbers:

The sum of decimals can be estimated using benchmark numbers, as in the following problems:

ⓐ

0.65 + 0.456

0.5 + 0.5 = 1

0.65 is close to 0.5

0.456 is close to 0.5

ⓑ

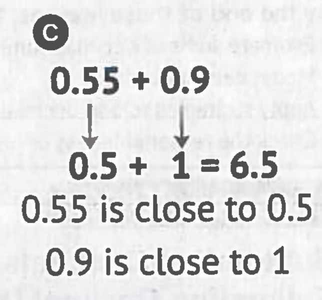
0.001 + 0.98

0 + 1 = 1

0.001 is close to 0

0.98 is close to 1

ⓒ



0.55 + 0.9

0.5 + 1 = 6.5

0.55 is close to 0.5

0.9 is close to 1

Strategies for Estimating the Sum of Decimals

- Front-End Estimation
- Benchmark Decimals
- Separate Wholes and Parts
- Round to the Nearest (One – Tenth – Hundredth)

1 **Estimate the sum of the following decimals:**
(Use the strategy you prefer)

a) 2.361 + 3.783 → Estimate: .... + ... = ...

b) 3.451 + 8.091 → Estimate: .... + ... = ...

c) 9.98 + 4.56 → Estimate: .... + ... = ...

d) 4.981 + 5.019 → Estimate: .... + ... = ...

2 **Taha has 54.20 LE. His brother has 45.75 LE. They want to combine their money to purchase 4 kilograms of apples for 100 LE. Estimate to see if they have enough money.**

....

....

....

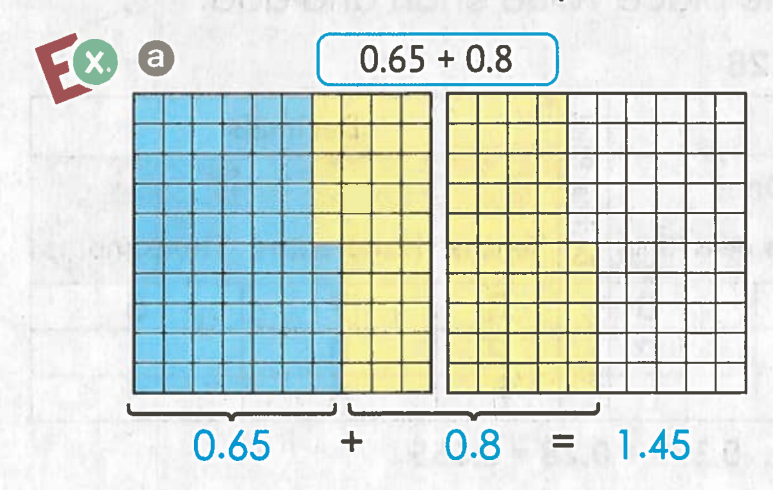
Learn

Modeling Decimal Addition

First: **Adding Decimals Using the Decimal Model:**

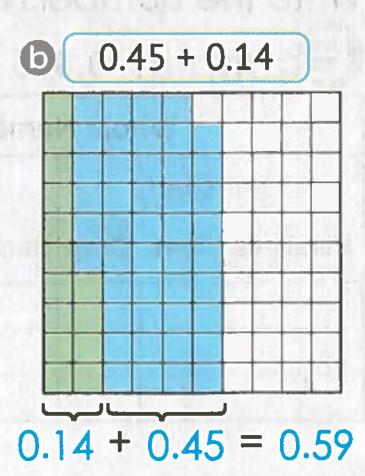
Represent each of the two decimals with different colors, their sum is the number of squares of both colors.

Ex. a) 0.65 + 0.8



0.65 + 0.8 = 1.45

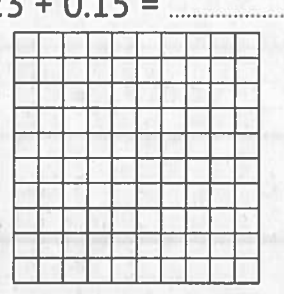
b) 0.45 + 0.14



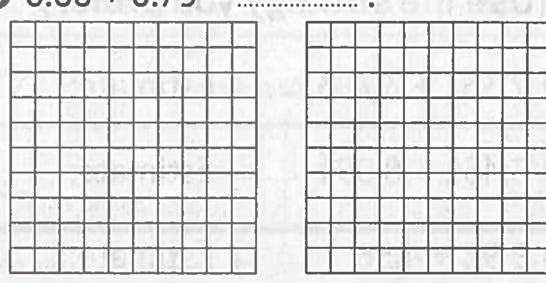
0.14 + 0.45 = 0.59

3 Use the following decimal models to find the result:

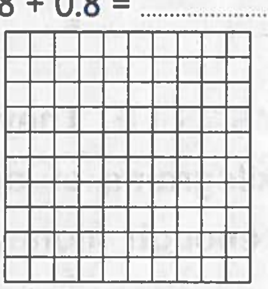
ⓐ 0.23 + 0.15 = ...



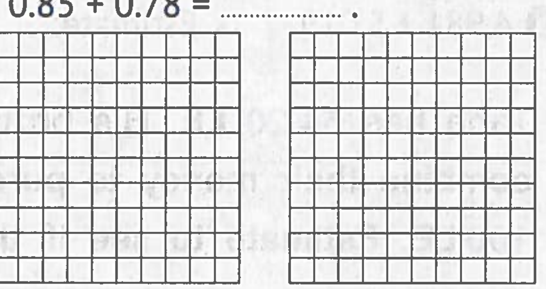
ⓑ 0.68 + 0.75 = ...



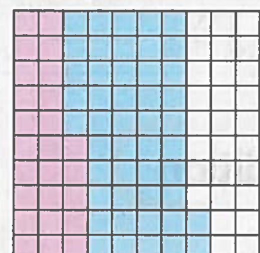
ⓒ 0.08 + 0.8 = ...



ⓓ 0.85 + 0.78 = ...



4 Write an expression to match the models. Write an addition problem, and then find the result:



ⓐ .... + ... = ...

ⓑ .... + ... = ...

Second: Adding Decimals Using the Place Value Chart:

Write the numbers in the place value chart and add.

Example: 0.375 + 0.28

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
					0	.	3	7	5
					0	.	2	8	
					0	.	6	5	5

So, 0.375 + 0.28 = 0.655

5 Use the place value chart to find the sum:

ⓐ 0.8 + 3.09 = ...

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

ⓑ 0.245 + 3.89 = ...

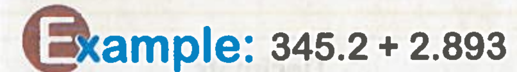
Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

ⓒ 4.028 + 2.83 = ...

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

ⓓ 125.36 + 3.08 = ...

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			



Learn — Adding Decimals

Example: **345.2 + 2.893**

Vertically: Arrange the digits correctly, so that the decimal point is under the decimal point, the Ones under the Ones, and the Hundreds under the Hundreds... and so on, and then add.

(Empty spaces can be filled with zeros)

```
  345.200
+   2.893
---------
  348.093
```

Horizontally: 345.200 + 2.893 = 248.093

6 **Add:**

ⓐ
```
  45.368
+  2.758
--------
........
```

ⓑ
```
   0.358
+ 34.19
--------
........
```

ⓒ
```
   45.98
+ 125.3
--------
........
```

ⓓ 36.89 + 4.5 = ...

ⓔ 58 + 3.89 = ...

7 **Complete: (As in the example)**

Ex. **25** Thousandths + **6** Hundredths = **85** Thousandths.

Place value: **8** Hundredths, **5** Thousandths.

ⓐ **3** Thousandths + **4** Thousandths = ... Thousandths.

Place value: .... Hundredths, ... Thousandths.

ⓑ **7** Thousandths + **4** Thousandths = ... Thousandths.

Place value: .... Hundredths, ... Thousandths.

ⓒ **39** Thousandths + **5** Thousandths = ... Thousandths

Place value: .... Hundredths, ... Thousandths.

ⓓ **3** Hundredths + **99** Thousandths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

8 **Diaa travels from Cairo to Alexandria and stops to rest in Tanta. If the distance between Cairo and Tanta is 92.61 km, and the distance between Tanta and Alexandria is 147.7 km, what is the distance traveled by Diaa?**

....



Subtracting Decimals – Estimating Decimal Differences – Subtracting to the Thousandths Place – Decimal Story Problems

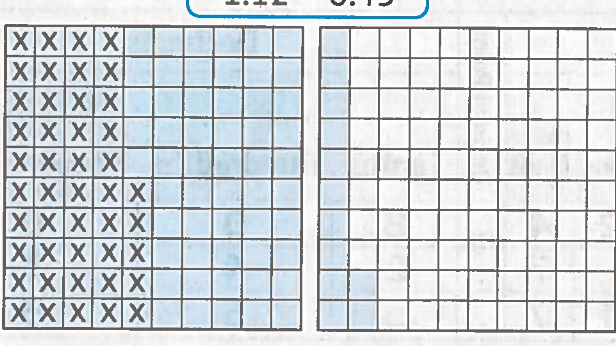
Learn

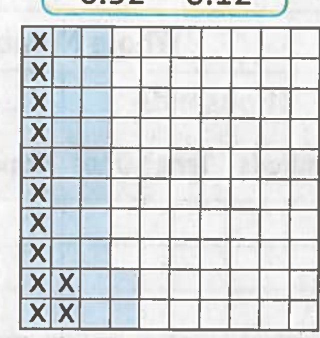
Modeling Decimal Subtraction

First: **Modeling Decimal Subtraction:**

Represent the greatest decimal fraction on the model, and then remove the squares of the smaller decimal fraction:



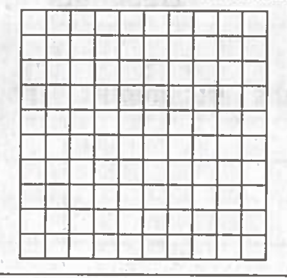




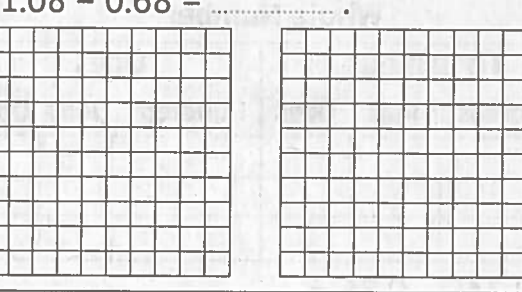
1.12 – 0.45 = 0.67 0.23 – 0.12 = 0.20

1 **Use the decimal models to find the result:**

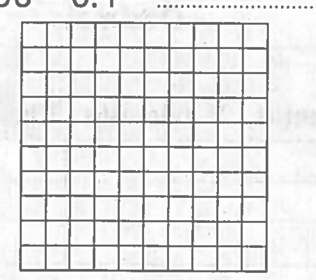
ⓐ 0.28 – 0.15 = ...



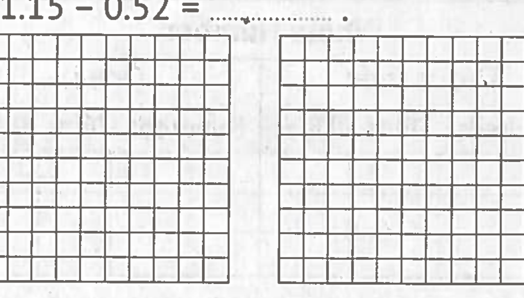
ⓑ 1.08 – 0.68 = ...



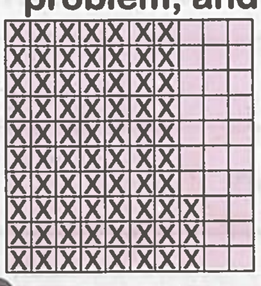
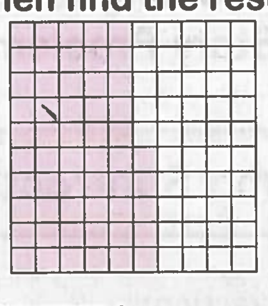
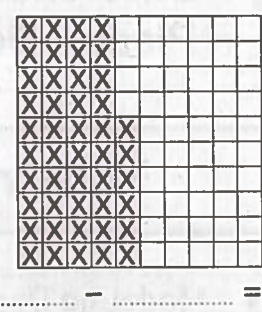
ⓒ 0.58 – 0.4 = ...



ⓓ 1.15 – 0.52 = ...



2 Write an expression to match the models. Write a subtraction problem, and then find the result:

ⓐ .... – .... = ...

ⓑ .... – .... = ...

Second: Subtracting Decimals Using the Place Value Chart:

Write the numbers in the place value chart and then subtract.

Example: 24.8 – 7.245

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
				2	4	.	8	0	0
					7	.	2	4	5
				1	7	.	5	5	5

So, 24.8 – 7.245 = 17.555

3 Use the place value table to find the difference:

ⓐ 12.8 – 3.09 = ...

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

ⓑ 9.245 – 0.86 = ...

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

ⓒ 8.027 – 0.8 = ...

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

ⓓ 142.37 – 4.08 = ...

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

Learn

Subtracting Decimals

Example: 48.3 – 5.245

Vertically: Arrange the digits correctly, so that the decimal point is under the decimal point, the Ones under the Ones, and the Hundreds under the Hundreds... and so on, and then subtract.
(Empty spaces can be filled with zeros)

```
        9
      2 10 10
  48 . 3 0 0
–  5 . 2 4 5
-------------
  43 . 0 5 5
```

Horizontally: 48.300 – 5.245 = 43.055

4 Subtract:

ⓐ
```
  75.48
– 7.082
-------
```
....

ⓑ
```
  30
– 5.17
------
```
....

ⓒ
```
  102.002
–  12.347
---------
```
....

ⓓ 82.82 – 45 = ...

ⓔ 58 – 8.079 = ...

Learn

Estimating Decimal Differences

Strategies for Estimating Decimal Differences

- Front-End Estimation
- Benchmark Decimals
- Separate Wholes and Parts
- Round to the Nearest (One – Tenth – Hundredth)

5 **Estimate the difference of the following decimals: (Use the strategy you prefer)**

ⓐ 8.34 – 3.43 → **Estimate:** .... – .... = ...

ⓑ 345.1 – 80.91 → **Estimate:** .... – .... = ...

ⓒ 7.21 – 4.56 → **Estimate:** .... – .... = ...

ⓓ 0.981 – 0.089 → **Estimate:** .... – .... = ...

6 **Complete: (As in the example)**



75 Thousandths – 3 Hundredths = 45 Thousandths.

Place value: 4 Hundredths, 5 Thousandths.

ⓐ **45** Thousandths – **12** Thousandths = ... Thousandths.

Place value: .... Hundredths, ... Thousandths.

ⓑ **5** Hundredths – **13** Thousandths = ... Thousandths.

Place value: .... Hundredths, ... Thousandths.

ⓒ **4** Tenths – **75** Thousandths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

ⓓ **214** Thousandths – **18** Hundredths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

7 The width of the Tahya Misr Bridge, which connects northern and eastern Cairo to western Cairo across the Nile River, is 67.3 meters, and the Jiaxing-Shaoxing Sea Bridge in Japan is less in width than the Tahya Misr Bridge by 11.7 meters. How wide is the Jiaxing-Shaoxing Sea Bridge?

....

....

....

8 Rashad and his father went fishing. Each of them caught a giant fish, the mass of the first fish was 53.25 kilograms, and the mass of the other fish reached 46.8 kilograms. What is the mass of the two fish together?

....

....

....

9 The length of the Tahya Misr Bridge is 16.7 km. If Ramy travels along the length of the Tahya Misr Bridge and then returns this distance again, how many kilometers in total does he travel?

....

....

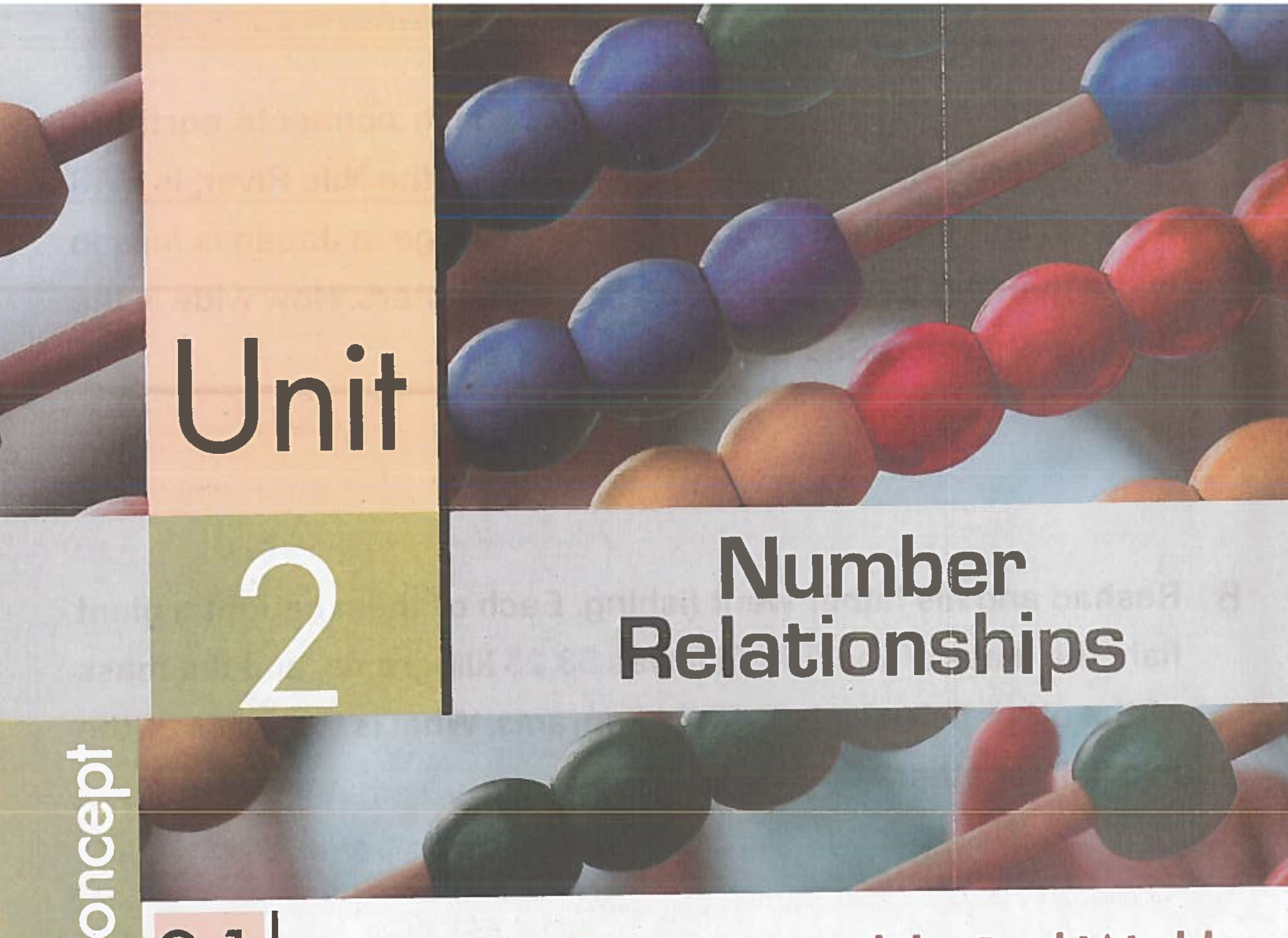
....

10 Sami rides his bike along the Tahya Misr Bridge walkway, which is 16.7 kilometers long and 3.25 kilometers wide. How many kilometers does he still need to ride to reach the end of the bridge?

....

....

....



2.1 | Expressions, Equations, and the Real World

Lesson 1:

Expressions, Equations, and Variables

Learning Objectives:

By the end of this lesson, the student will be able to:

- Explain the difference between expressions and equations.
- Explain why there might be an unknown in an expression or equation.
- Use letters or symbols to represent unknowns in expressions and equations.

Lessons 2 – 4:

Variables in Equations
Finding the Unknown
Telling Stories with Numbers

Learning Objectives:

By the end of these lessons, the student will be able to:

- Apply the relationship between addition and subtraction to find the value of the unknown in an equation.
- Solve equations involving decimal numbers to the Thousandths place.
- Write equations to represent story problems with unknown quantities.
- Write story problems involving addition and subtraction of decimal numbers.
- Solve equations involving decimal numbers to the Thousandths place.



Lesson 1 Expressions, Equations, and Variables

Remember

Variable	Expression	Equation
It's a letter or symbol that represents the **unknown value** in an equation. Such as: x, y, z, ……..	It's a set of fixed numbers and variables that line up next to each other. Such as: x + 5, 3 X y	It's a mathematical sentence that includes an equal relationship between two mathematical expressions. Such as: 5 + x = 9, y = 5 X 3

1 **Put a tick (✓) to classify the following mathematical sentences into "Equation" or Mathematical Expression" or "Other":**

		Equation	Mathematical Expression	Other
a	4.7 + 3.6 = M	…………	…………	…………
b	6.4 + 3.2 + 8	…………	…………	…………
c	56 – x = 47.5	…………	…………	…………
d	3.4 + L	…………	…………	…………
e	Aya ran 8 km last week.	…………	…………	…………
f	3.5 + 2.456 = 2.5 + 3.456	…………	…………	…………
g	37.125 – 13.7	…………	…………	…………
h	Amir had 3.5 kg of apples.	…………	…………	…………

Learn

Using Letters or Symbols to Represent Unknown Values in Mathematical Expressions and Equations

Example:

Yassin bought a pen and a ruler. He paid 14.5 pounds for them. If the price of the pen is 6.25 pounds, what is the price of the ruler?

Write an equation to represent the price of the ruler.

The previous example can be expressed as follows:

The price of the pen	+	The price of the ruler	=	What Yassin paid

What Yassin paid = 14.5 pounds.
The price of the pen = 6.25 pounds.
The price of the ruler is unknown.

→ **6.25 + unknown = 14.5**

- Replace the word unknown with one of the letters (a variable) "y".
- **So, the equation that represents the price of the ruler is:**

$6.25 + y = 14.5$ or $y = 14.5 - 6.25$

2 **Read the following story problems. Make an equation for each problem:**

ⓐ Ahmed had 25.15 pounds, and he bought a toy for 14.5 pounds.
How many pounds does Ahmed have left? ....

ⓑ A class in a school has 45 students. 28 of them are girls.
How many boys are there in this class?
....

ⓒ A farm had 4,200 chickens. 3,350 chickens were sold in a week.
How many chickens are left on the farm?
....

ⓓ Ahmed bought a car for 90,990 pounds and bought a house for his family for 750,250 pounds.
How much did Ahmed spend to buy the car and the house?
....



Variables in Equations
Finding the Unknown
Telling Stories with Numbers

Learn

Determining the Value of the Unknown

You can use mental math to determine the value of the (unknown) variable in the equation.

Example: Find the value of (a) in each of the following:

ⓐ $2.5 + a = 7.75$

$a = 7.75 - 2.5 = 5.25$

ⓑ $12.7 - a = 9.7$

$a = 12.7 - 9.7 = 3$

ⓒ $a - 3.7 = 4.68$

$a = 3.7 + 4.68 = 8.38$

1 Use mental math to estimate the equations, and then solve them:

ⓐ $8.235 + p = 10.224$ p = ...

p = ...

ⓑ $t - 2.445 = 0.26$ t = ...

t = ...

ⓒ $6.82 - h = 1.023$ h = ...

h = ...

ⓓ $v + 42.809 = 100.01$ v = ...

v = ...

ⓔ $5.52 + 2.041 + m = 9.271$ m = ...

m = ...

ⓕ $2.377 + 3.1 = 1.52 + a$ a = ...

a = ...



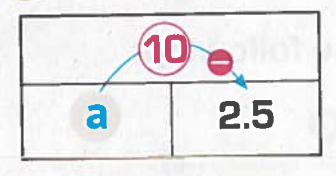
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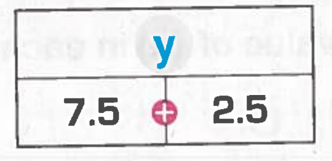
Part-to-Whole Bar Model

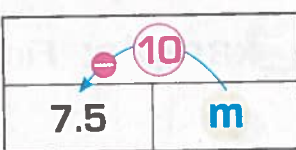
Bar model: is a schematic diagram that represents the relationship between the whole and the part.



Example: From the following bar models, we conclude that:









$a = 10 - 2.5$ $\quad$ $y = 7.5 + 2.5$ $\quad$ $m = 10 - 7.5$

2 **Write an equation to represent each story problem using (n) as the variable, and find its value. Use the bar models.**

ⓐ Bassem takes the bus from Cairo to Tanta. The distance is 92.7 **km**. The bus stops 53.5 **km** away in the city of Banha to take more passengers. How far is Banha from Tanta?

....

....

Bar Model

....	
....	....

ⓑ Bassem and his friend Jana were taking a snorkel. He saw a turtle whose length is 0.78 **m**. Jana saw another turtle, 0.58 **m** longer than the first one. How tall is the turtle that Jana saw?

....

....

Bar Model

....	
....	....

c In Jana's backpack, she has a bottle of mass 1.5 kg, books of mass 2.51 kg and a snack. Her full backpack has a mass of 4.535 kg.
What is the mass of the snack?

....

....

....

....

Bar Model

....		
....	....	....

3 Write a story problem representing each equation, and then solve it:

a $x + 2.75 = 12.5$

....

....

....

....

....

b $34.750 - s = 15.25$

....

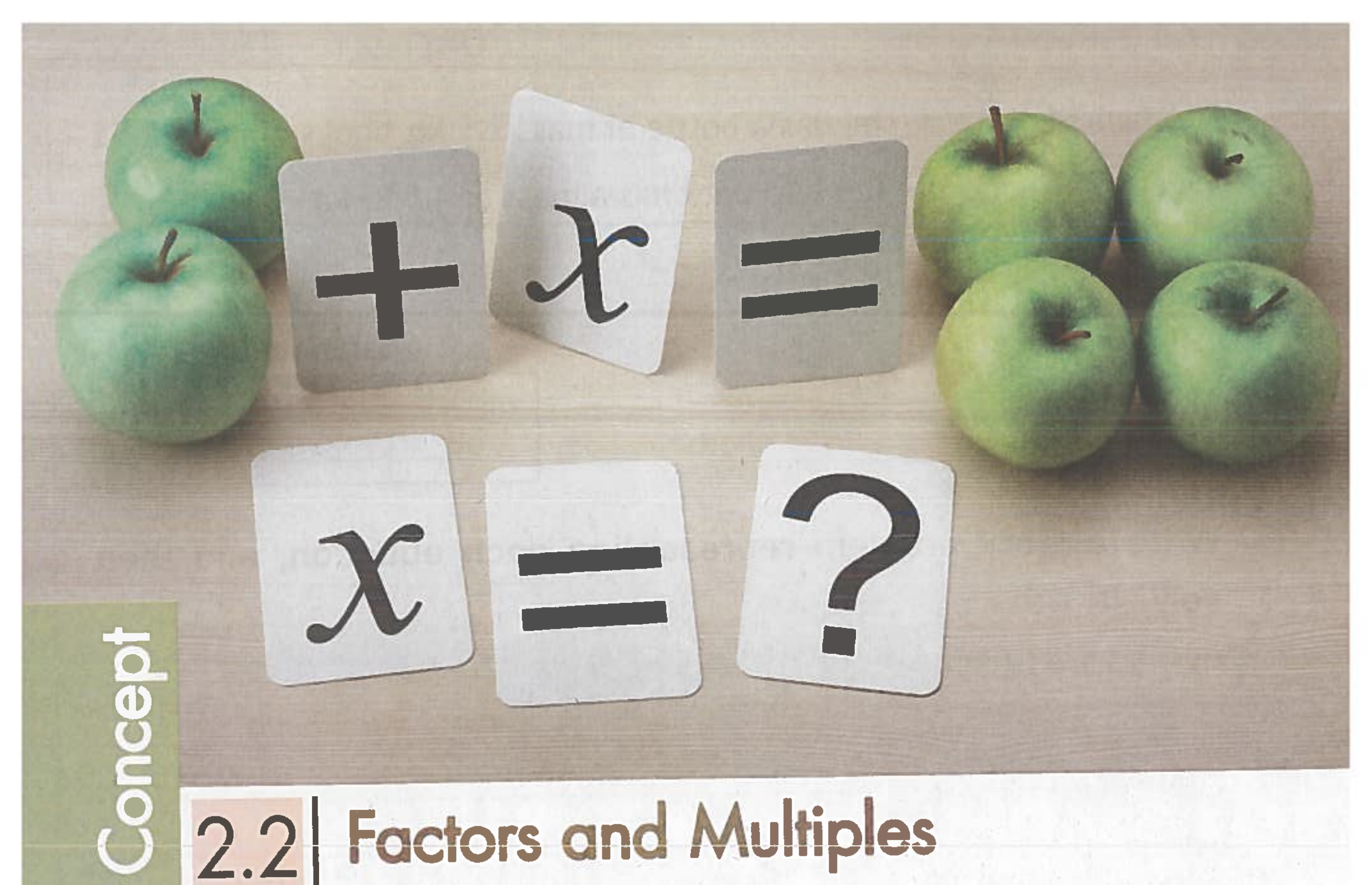
....

....

....

....

....



Concept

2.2 | Factors and Multiples

Lessons 5&6: Finding Factors
Prime Factorization

Learning Objectives:

By the end of these lessons, the student will be able to:

- Explain the meaning of factors.
- Identify the factors of a given number.
- Use a factor tree to identify the prime factors of a given number.

Lesson 7: Greatest Common Factors (GCF)

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use factor trees to identify common factors of two whole numbers.
- Use factor trees to identify the greatest common factor of two whole numbers.

Lessons 8&9: Identifying Multiples
Least Common Multiple (LCM)

Learning Objectives:

By the end of these lessons, the student will be able to:

- Explain the meaning of multiples.
- Identify common multiples of two whole numbers up to 12.
- Explain the meaning of least common multiple.
- Identify the least common multiple of two whole numbers up to 12.

Lesson 10: Factors or Multiples?

Learning Objectives:

By the end of this lesson, the student will be able to:

- Explain the difference between factors and multiples.
- Identify the greatest common factor and least common multiple of two given numbers.

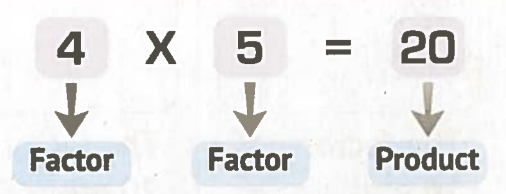

Lessons 5&6

Finding Factors
Prime Factorization

Remember

Factors

Factors are the numbers that are multiplied to form a product.
Or the factor of a number divides the number equally without a remainder.



Methods for Finding the Factors of a Number

Factor T-chart	Factor Rainbow	Factor Tree
18: 1 | 18, 2 | 9, 3 | 6	18: 1, 2, 3, 6, 9, 18	18: 1, 2, 3, 6, 9, 18

- 2 is a factor of all even numbers, whose Ones digit is 0, 2, 4, 6, or 8.
- 3 is a factor of numbers, whose sum of digits is divisible by 3 without a remainder.
- 5 is a factor of numbers, whose Ones digit is 0 or 5.
- **Prime number:** is a number greater than one and has only two factors, one and the number itself.
- **All prime numbers are odd, except 2** - The smallest prime number is 2.
- **The only even prime number is 2** - The smallest odd prime number is 3.
- 1 is neither a prime number nor a composite number.
- **Prime numbers less than 100 are:**
  2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47,
  53, 59, 61, 67, 71, 73, 79, 83, 89, 97.

1 **Fill in the missing factors represented by the variables:**

ⓐ $4 \times m = 16$
m = ...

ⓑ $v \times 15 = 45$
v = ...

ⓒ $6 \times t = 42$
t = ...

2 **Find the factors of each of the following numbers using the method you prefer:**

ⓐ 16	ⓑ 20	ⓒ 36	ⓓ 48
The factors of **16** are:	The factors of **20** are:	The factors of **36** are:	The factors of **48** are: ....

Learn

Prime Factors

Prime Factorization:

It means writing the composite number as the product of prime numbers.



8 = 2 X 2 X 2 , 12 = 3 X 2 X 2 , 15 = 3 X 5

Prime Factorization Using a Factor Tree



Factorize 24 into its prime factors:

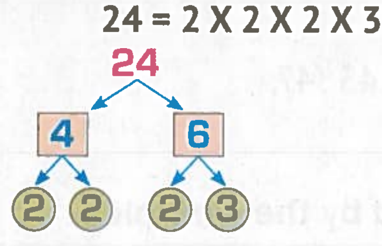
① Choose two numbers whose **product** is 24 (1 should not be used).

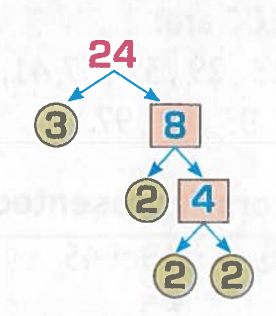
② Circle the prime numbers and leave them, then continue factorizing the composite numbers.

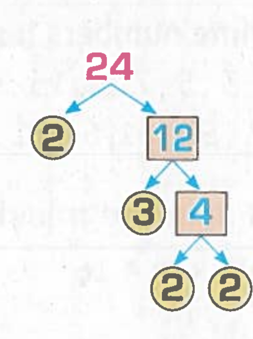
③ Stop when all numbers become **prime numbers**.

Note that: all of the following are true, and we get the same result:

24 = 2 X 2 X 2 X 3







3 Factorize each number into its prime factors using the **factor tree**:

ⓐ 16

16 = ...

ⓑ 20

20 = ...

ⓒ 36

36 = ...

ⓓ 48

48 = ...

4 Find the **product** of the prime factorization listed. Then, list all other **factors** of the product:

ⓐ 2 X 2 X 5

....

....

ⓑ 2 X 3 X 7

....

....

ⓒ 2 X 2 X 2 X 7

....

....



Greatest Common Factors (GCF)



Methods for Factorizing Numbers into their Prime Factors

Example: Factorize 30 into its prime factors:

① **Factor Tree:**

- Choose two numbers whose product is 30.
- Complete the factorization as in the previous lesson.

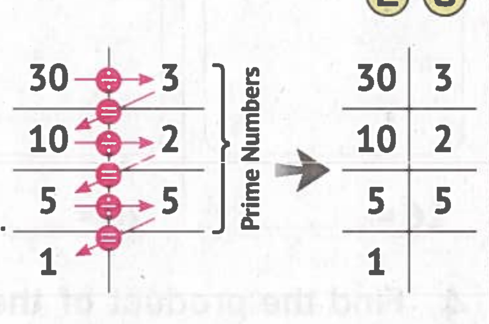
30 = 2 X 3 X 5

30 → 5, 6; 6 → 2, 3

② **Repeated Division:**

- Divide by one of the **prime factors** of a number.
- Keep dividing by another prime factors.
- Stop when the quotient becomes 1.

30 = 2 X 3 X 5



Learn

Determining the Greatest Common Factor of Two Numbers Using Prime Factors

Example: Find the GCF for 24 and 36.

- Factorize both numbers into their **prime factors**.
- Write the prime factors of both numbers, so that the similar factors are on top of each other.
- For every two same factors, we get a factor.
- The product of these factors is the **greatest common factor**.

24	=	2	X 2	X 2	X 3					
36	=	2	X 2		X 3	X 3				
GCF	=	2	X 2		X 3		= 12			

So, the GCF for 36 and 24 is 12.

1 Find the GCF for each of the following:

ⓐ 28, 42

28 = ...

42 = ...

GCF = ... = ...

ⓑ 18, 27

18 = ...

27 = ...

GCF = ... = ...

ⓒ 12, 20

12 = ...

20 = ...

GCF = ... = ...

ⓓ 16, 32

16 = ...

32 = ...

GCF = ... = ...

2 There are 15 boys and 20 girls in a classroom. The teacher wants to divide the class into the greatest equal groups, so that the numbers of boys and girls are equal in all groups.

(Use the greatest common factor)

....

....

....

....



Identifying Multiples
Least Common Multiple (LCM)

Remember

Multiple of a number:

It is the product we get when we multiply a certain number by another number.

How to Find the Multiples of a Number

- Count by Jumping on the Number Line
- Use the Hundred Chart
- Use Multiplication Facts

- Zero (0) is the **common multiple** of all numbers.
- All numbers are multiples of 1.
- Multiples of numbers are **infinite**.
- Each number is a multiple of **itself**.
- The product of any two numbers is a **common multiple** of them.

For example: 35 = 5 x 7, so 35 is a common multiple of 7 and 5.

Example (1): Find the common multiples of 3 and 4.

- The multiples of 3 are: 0, 3, 6, 9, 12, 15, 18, 21, 24, ...
- The multiples of 4 are: 0, 4, 8, 12, 16, 20, 24, 28, 32, ...
- Common multiples are: 0, 12, 24,... *(Other answers are available)*

Example (2): Find the common multiples of 4, 6, and 8.

- The multiples of 4 are: 0, 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48....
- The multiples of 6 are: 0, 6, 12, 18, 24, 30, 36, 42, 48,...
- The multiples of 8 are: 0, 8, 16, 24, 32, 40, 48,...
- Common multiples are: 0, 24, 48,... *(Other answers are available)*

1 ⓐ Mention the first **10** multiples of **2**: ....

ⓑ Mention the first **5** multiples of **5**: ....

ⓒ Mention the common multiples of **2** and **5** from those you mentioned:

....

2 ⓐ Mention the first **10** multiples of **3**: ....

ⓑ Mention the first **6** multiples of **6**: ....

ⓒ Mention the first **3** multiples of **9**: ....

ⓓ Mention the common multiples of the numbers **3, 6 and 9** from those you mentioned: ....

Learn

Least Common Multiple (LCM)

It is the smallest common multiple of two or more numbers with the exception of zero (0).

Example: **Find the LCM of 6 and 8:**

- The multiples of **6** are: 0 , 6 , 12 , 18 , 24 , 30 , 36 , 42 , 48 ,........
- The multiples of **8** are: 0 , 8 , 16 , 24 , 32 , 40 , 48 , 56 , 64 ,........
- Common multiples are: 0 , 24 , 48 ,... *(Other answers are available)*

The least common multiple of the two numbers (LCM) is 24

Learn

Determining the Least Common Multiple of Two Numbers Using Prime Factors

Example: **Find the LCM for 12 and 8.**

- Factorize the two numbers into their **prime factors**.
- Write the prime factors of the two numbers, so that the similar factors are on top of each other.
- For every two same factors, we get a common factor.
- We also write dissimilar factors.
- The product of these factors is the least common multiple.

So, the LCM of 8 and 12 is **24**.

3 Find the GCF and LCM for each of:

ⓐ 6, 9

6 = ...

9 = ...

GCF = ...

LCM = ...

ⓑ 10, 15

10 = ...

15 = ...

GCF = ...

LCM = ...

ⓒ 4, 8

4 = ...

8 = ...

GCF = ...

LCM = ...

ⓓ 12, 9

12 = ...

9 = ...

GCF = ...

LCM = ...

Notes

- The least common multiple of two prime numbers is their **product**.
- If one of the two numbers is a factor of the other number, then the larger number is the **least common multiple** of the two numbers.



Lesson 10 Factors or Multiples?

The Difference Between Factors and Multiples

Factors

Factors of a number

Are all pairs whose products are multiplied together to give this number.

- Not all numbers have the same number of factors.
- When a number is divided evenly, it is divided into factors.
- One of the factors can be obtained by dividing the multiple by the other factor.

Multiples

Multiples of a number

Are the setting that appears when jumping by the same number, starting from zero.

- All numbers have an **infinite** number of **multiples**.
- The **multiplier** is the product of two factors.
- Multiples can be found by multiplying the factors.

Story Problems

GCF

Usually involves breaking or cutting things into pieces or separating them into multiple groups.

LCM

Usually involves repetition, or two things happening at the same time.

Note the following two examples:

Example (1):

Omnia has two strips of cloth. One is 35 cm wide, and the other is 75 cm wide. She wants to cut both pieces into strips of equal width that are as wide as possible. How wide should she cut the strips?

(In this example, Omnia wants to divide the cloth into pieces, so we use the GCF in the solution)

Solution: 35 = 5 x 7

75 = 5 X 5 X 3

GCF = 5

The largest width of the strips = 5 cm.

Example (2):

Mohamed trains to walk every 7 days and lift weights every 4 days, he did both today. After how many days will Mohamed walk and lift weights on the same day?

(In this example, there is a repetition of what Mohamed does, so we use the LCM in the solution)

Solution: Multiples of 7: 0, 7, 14, 21, 28, 35, 42, ...

Multiples of 4: 0, 4, 8, 12, 16, 20, 24, 28, 32 ....

LCM = 28

Mohamed will do both exercises after 28 days.

1. Omar exercises every 12 days. Rana exercises every 8 days. Both friends exercised together today. How many days will it be until they exercise together again?

....

....

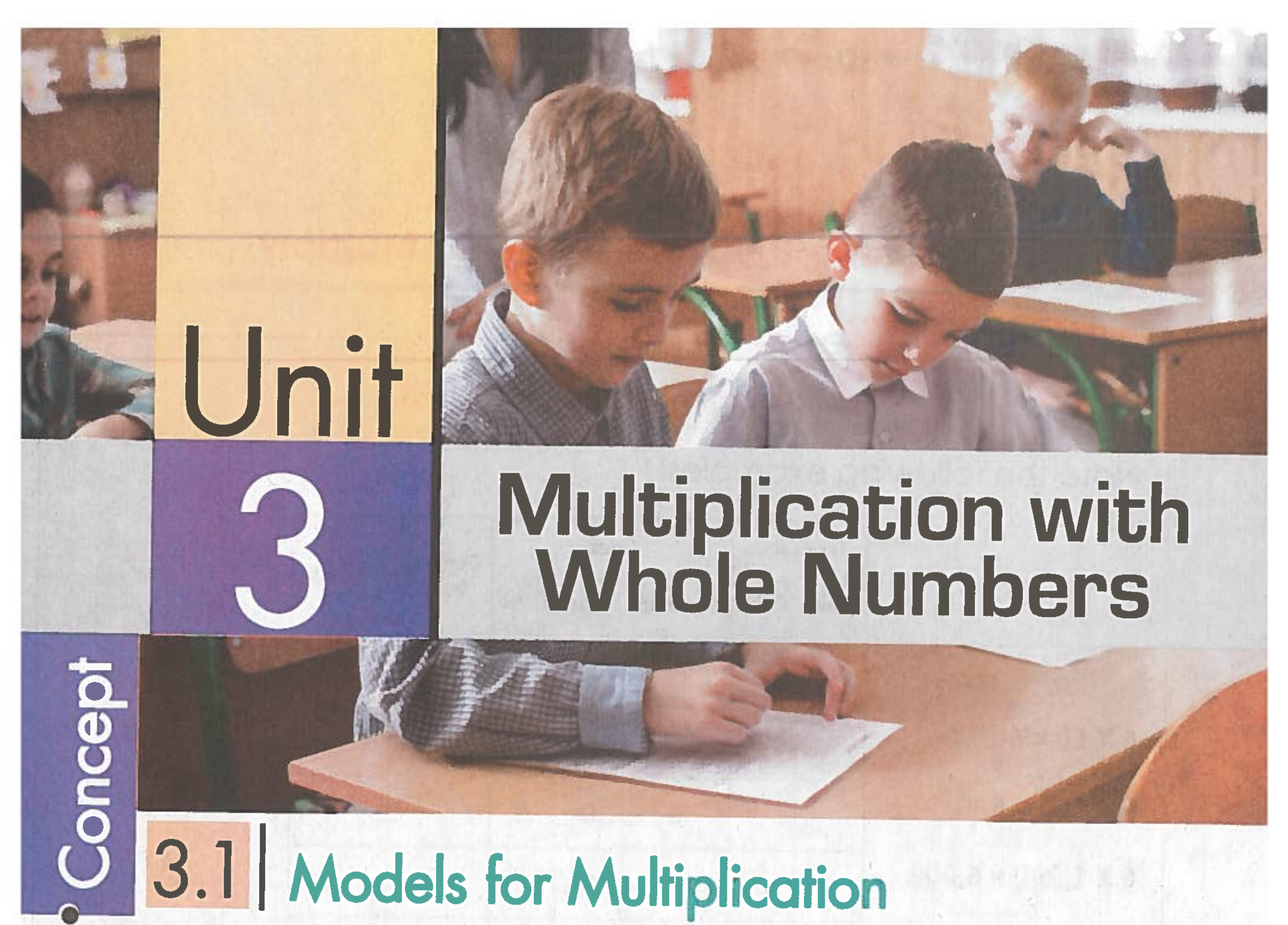
2. Malak baked 30 servings of cakes and 48 servings of baklava for her family.
She wants to divide the desserts into containers, so that each person receives the same number of servings. How many containers will she need?

....

....

3. Find the GCF and LCM for each of the following:

ⓐ 12, 10	ⓑ 5, 9
ⓒ 2, 1	ⓓ 8, 4



Unit 3 Multiplication with Whole Numbers

Concept

3.1 Models for Multiplication

Lessons 1&2:

The Power of Ten
Using the Area Model to Multiply

Learning Objectives:

By the end of these lessons, the student will be able to:

- Identify powers of ten.
- Multiply single digits by powers of ten.
- Explain the patterns he/she observes observe when multiplying by powers of ten.
- Multiply using the area model.

Lessons 3&4:

The Distributive Property of Multiplication
Using the Partial Products Model to Multiply

Learning Objectives:

By the end of these lessons, the student will be able to:

- Explain the relationship between the area model of multiplication and the Distributive Property of Multiplication.
- Multiply using the partial products model.
- Estimate products.



The Power of Ten
Using the Area Model to Multiply

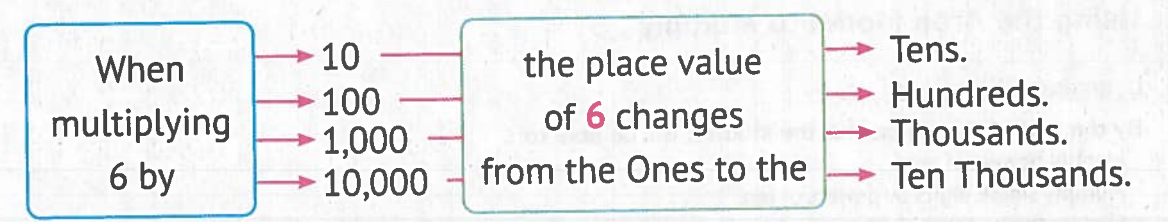
Remember

Multiplying by 10, 100, 1,000, ...

Note the following examples:

	Thousands		Ones			Decimal Point	Tenths	
	Tens	Ones	Hundreds	Tens	Ones			
					6	.		
6 X 10 = 60				6	0	.		X 10
6 X 100 = 600			6	0	0	.		X 100
6 X 1,000 = 6,000		6	0	0	0	.		X 1,000
6 X 10,000 = 60,000	6	0	0	0	0	.		X 10,000

We note that:



1 Complete the following:

ⓐ 5 X 100 = ...

ⓑ 6 X 10 = ...

ⓒ 8 X 100,000 = ...

ⓓ 1,000 X 4 = ...

ⓔ .... X 10 = 80

ⓕ .... X 3 = 300

ⓖ .... X 7 = 700,000

ⓗ .... X 1,000 = 9,000

ⓘ 10,000 X .... = 20,000

ⓙ 5 X .... = 5,000

2 Answer the following:

ⓐ A crate of mangoes weighs **9** kilograms. How many kilograms would **1,000** crates weigh?

....

ⓑ If **10** millimeters make **1** centimeter, how many millimeters are in **7** centimeters?

....

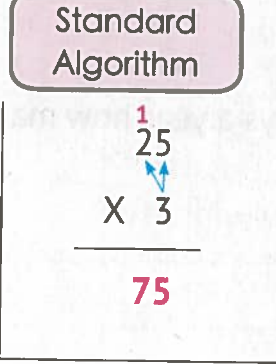
ⓒ There are **1,000** milliliters in **1** liter. Omar bought a **2**-liter bottle of juice. How many milliliters are in this bottle?

....



Remember

The product of 25 X 3 can be found in different ways



Standard Algorithm	Partial Products	Distributive Property Model	Area Model
25 (carry 1) X 3 75	25 X 3 (3 X 5) 15 (3 X 20) + 60 75	3 X (20 + 5) = (3X20) + (3X5) = 60 + 15 = 75	20, 3 3: 3 X 20 = 60	5 X 3 = 15 60 + 15 = 75

Example (1): 45 X 38

45 = 40 + 5; 38 = 30 + 8

X	30	8
40	1,200	320
5	150	40

Example (2): 45 X 38

69 = 60 + 9; 427 = 400 + 20 + 7

X	400	20	7
60	24,000	1,200	420
9	3,600	180	63

3 Multiply using the area model:

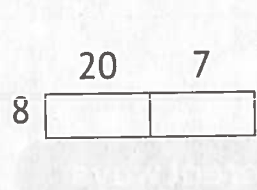
ⓐ 4 X 247 = ...

ⓑ 62 X 36 = ...

ⓒ 84 X 273 = ...

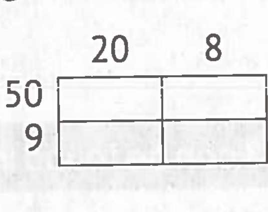
4 Write the multiplication problem that expresses each model, and then solve it:

ⓐ



....

ⓑ



....

ⓒ

	800	5	6
40			
3			

....

5 Answer the following

ⓐ Ali walks 6 kilometers each day. If he walked 187 days a year, how many kilometers would he walk?

....

....

ⓑ What if Ali were to drive 60 kilometers each day? How many kilometers would he drive in 105 days?

....

....



The Distributive Property of Multiplication
Using the Partial Products Model to Multiply

Remember

Multiplication Strategies

The Distributive Property of Multiplication:

Example (1): 45 X 38

45 X 38 = (40 + 5) X (30 + 8)

= (40 X 30) + (40 X 8) + (5 X 30) + (5 X 8)

= 1,200 + 320 + 150 + 40 = **1,710**

Example (2): 69 X 427

69 X 427 = (60 + 9) X (400 + 20 + 7)

= (60 X 400) + (60 X 20) + (60 X 7) + (9 X 400) + (9 X 20) + (9 X 7)

= 24,000 + 1,200 + 420 + 3,600 + 180 + 63

= **29,463**

1 Complete the following:

a) 7 X 63 = 7 X (.......... + ...)

= (7 X ....) + (7 X ....) = ... + ... = ...

b) 9 X 208 = 9 X (.......... + ...) = (9 X ....) + (9 X ....)

= .... + ... = ...

c) 24 X 38 = (.......... + ...) X (.......... + ...)

= (...... X ......) + (...... X ......) + (...... X ......) + (...... X ......)

= .... + ... + ... + ... = ...

d) 82 X 107 = (.............. + ...) X (.............. + ...)

= (...... X ......) + (...... X ......) + (...... X ......) + (...... X ......)

= .... + ... + ... + ... = ...

e) 62 X 142 = (.............. + ...) X (.............. + ... + ...)

= (... X ...) + (... X ...) + (... X ...) + (... X ...) + (... X ...) + (... X ...)

= .... + ... + ... + ... + ... + ... = ...

Learn

Flexible Numbers

Note that when multiplying the two numbers 83 X 14, 83 and 14 can be divided using more than one method.

Examples:

a) 83 X 14 = (80 + 3) X (10 + 4)

	10	4
80	800	320
3	30	12

800 + 320 + 30 + 12 = **1,162**

b) 83 X 14 = (40 + 40 + 3) X (10 + 4)

	10	4
40	400	160
40	400	160
3	30	12

400 + 160 + 400 + 160 + 30 + 12 = **1,162**

c) 83 X 14 = (80 + 3) X (7 + 7)

	7	7
80	560	560
3	21	21

560 + 560 + 21 + 21 = **1,162**

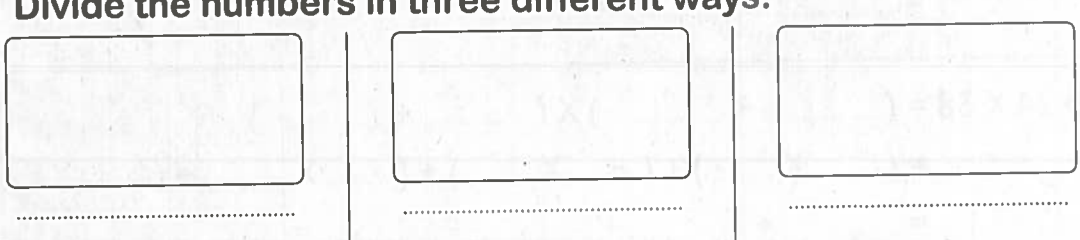
d) 83 X 14 = (50 + 30 + 3) X (7 + 7)

	7	7
50	350	350
30	210	210
3	21	21

350 + 350 + 210 + 210 + 21 + 121 = **1,162**

From the above, we find that all methods of dividing numbers lead to the same result.

2 **Use the area model to find the result of (74 x 12).**
Divide the numbers in three different ways:

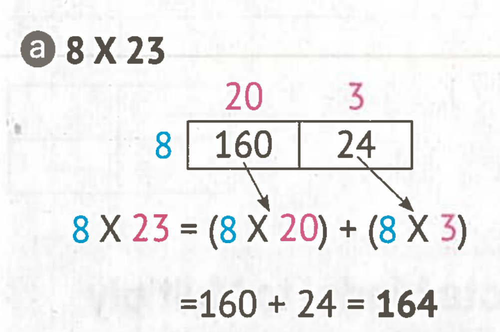


Learn

The Relationship Between the Area Model of Multiplication and the Distributive Property of Multiplication

Note the following examples:

ⓐ **8 X 23**



	20	3
8	160	24

8 X 23 = (8 X 20) + (8 X 3)

=160 + 24 = **164**

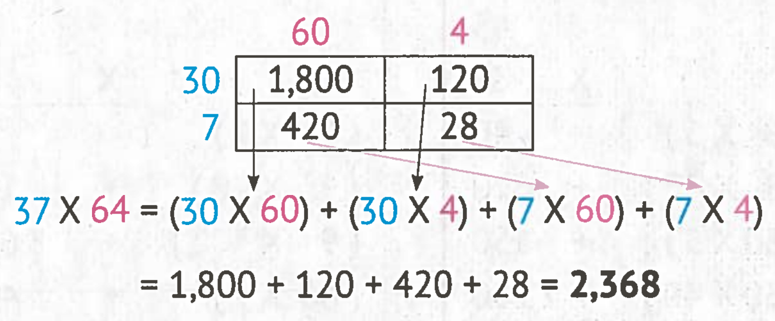
ⓑ **3 X 513**

	500	10	3
3	1,500	30	9

3 X 513 = (3 X 500) + (3 X 10) + (3 X 3)

= 1,500 + 30 + 9 = **1,539**

ⓒ **37 X 64**



	60	4
30	1,800	120
7	420	28

37 X 64 = (30 X 60) + (30 X 4) + (7 X 60) + (7 X 4)

= 1,800 + 120 + 420 + 28 = **2,368**

3 Complete using the area model:

ⓐ .... X .... = ... X (......... + ...)

= (......... X ....) + (......... X ....)

= .... + ... = ...

	30	7
8	240	56

ⓑ .... X .... = ... X (......... + ... + ...)

= (...... X ......) + (...... X ......) + (...... X ......)

= .... + ... + ... = ...

	200	60	4
5	1,000	300	20

ⓒ .... X .... = (......... + ...) X (......... + ...)

= (...... X ......) + (...... X ......)

+ (...... X ......) + (...... X ......)

= .... + ... + ... + ... = ...

	70	3
20	1,400	60
6	420	18

4 Complete the area model and find the product:

a (4 X 50) + (4 X 3) + (20 X 50) + (20 X 3)

= .... X .... = ...

....	....	....
....	....	....
....	....	....

b (20 X 40) + (20 X 7) + (8 X 40) + (8 X 7)

= .... X .... = ...

....	....	....
....	....	....
....	....	....

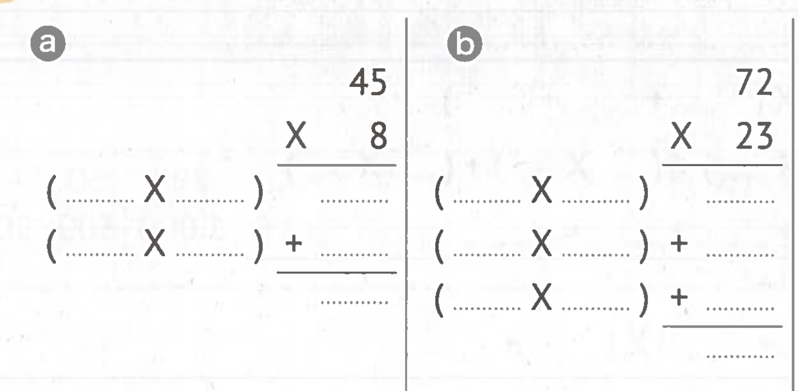
Learn

Using the Partial Products Model to Multiply

```
               45
           X   38
           ------
( 8  X 5 )     40
( 8  X 40 ) + 320
( 30 X 5 )  + 150
( 30 X 40 ) + 1,200
           ------
            1,710
```

```
                 427
             X    69
             -------
( 9  X 7 )        63
( 9  X 20 )  +   180
( 9  X 400 ) + 3,600
( 60 X 7 )   +   420
( 60 X 20 )  + 1,200
( 60 X 400 ) + 24,000
             -------
              29,463
```

5 Find the product using the partial products strategy:



a

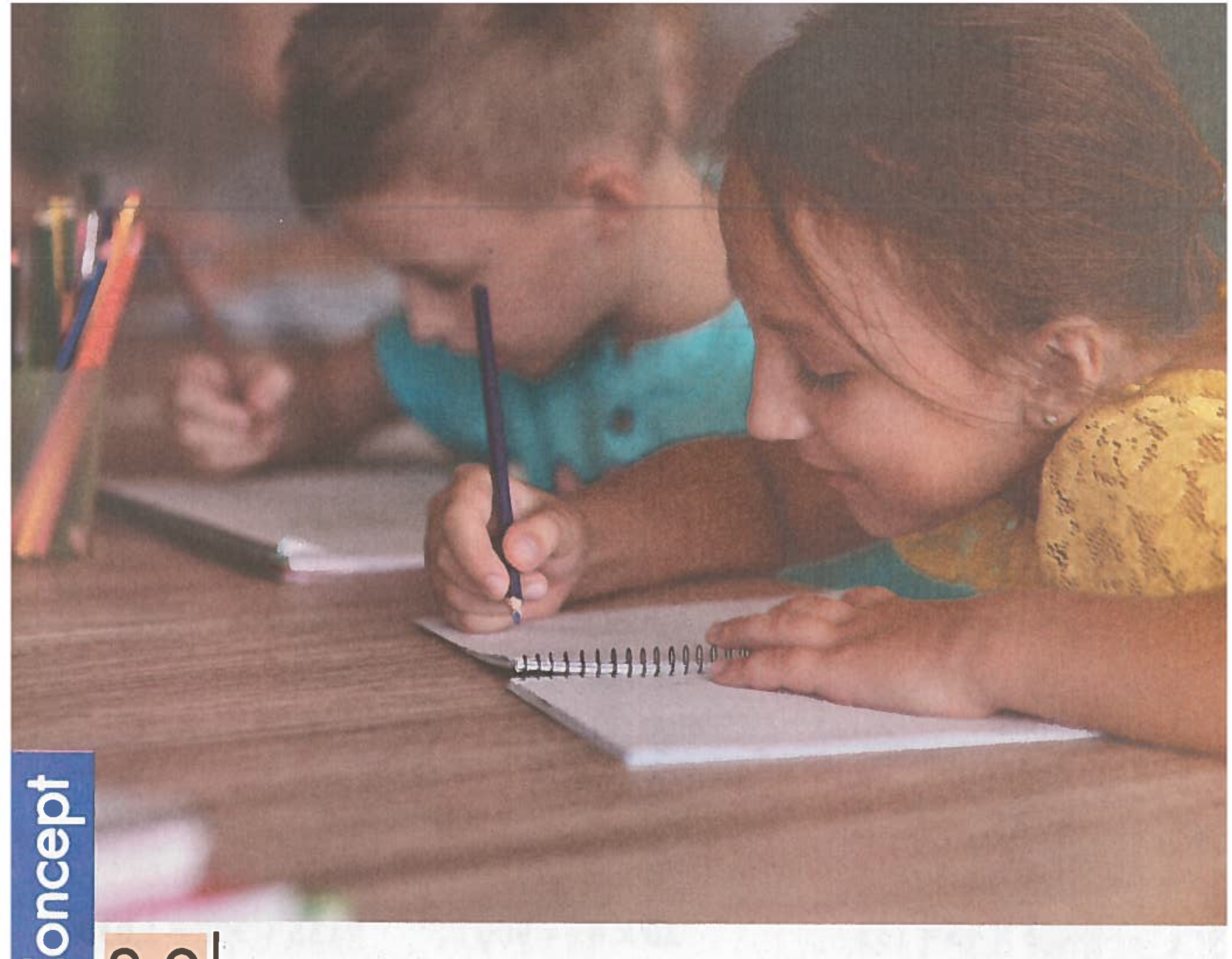
```
                     45
                 X    8
                 ------
( ....... X ....... )   .......
( ....... X ....... ) + .......
                 ------
                        .......
```

b

```
                     72
                 X   23
                 ------
( ....... X ....... )   .......
( ....... X ....... ) + .......
( ....... X ....... ) + .......
                 ------
                        .......
```

c

```
                    218
                 X   37
                 ------
( ....... X ....... )   .......
( ....... X ....... ) + .......
( ....... X ....... ) + .......
( ....... X ....... ) + .......
( ....... X ....... ) + .......
( ....... X ....... ) + .......
                 ------
                        .......
```



Concept

3.2 Multiplying 4-Digit Numbers by 2-Digit Numbers

Lessons 5 – 7:

What Is an Algorithm?
Multiplying Multi-Digit Numbers
Multiplication Problems in the Real World

Learning Objectives:

By the end of these lessons, the student will be able to:

- Multiply using the standard algorithm.
- Multiply 4-digit numbers by 2-digit numbers using the standard algorithm.
- Use estimation to check the reasonableness of his/her answers.
- Solve multistep story problems involving multiplication.

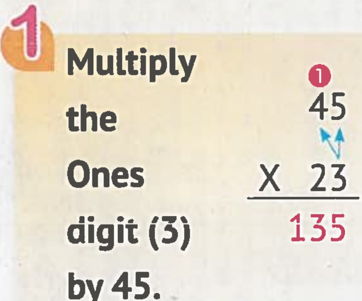


What Is an Algorithm?
Multiplying Multi-Digit Numbers
Multiplication Problems in the Real World

Learn

Standard Algorithm for Multiplication

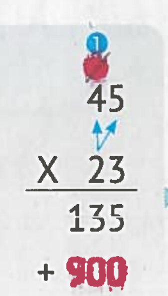
Example: Multiply: 45 X 23





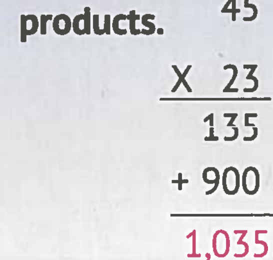
3 X 45 = 135





20 X 45 = 900





135 + 900 = 1,035

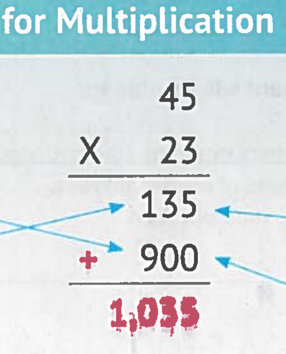
Learn

Comparing Multiplication Models

Area Model

	40	5
20	800	100
3	120	15

Standard Algorithm for Multiplication



Partial Products Model

	45	
X	23	
	15	(3 X 5)
+	120	(3 X 40)
+	100	(20 X 5)
+	800	(20 X 40)
	1,035	

1 Find the product using the standard algorithm for multiplication:

ⓐ
```
     78
X    26
-------
 ......
+ ......
-------
 ......
```

ⓑ
```
     63
X    37
-------
 ......
+ ......
-------
 ......
```

ⓒ
```
     92
X    19
-------
 ......
+ ......
-------
 ......
```

ⓓ
```
     46
X    53
-------
 ......
+ ......
-------
 ......
```

Learn

Multiplying 4-Digit Numbers by 2-Digit Numbers

Example: **Multiply: 4,275 X 46**

Area Model

	4,000	200	70	5
40	160,000	8,000	2,800	200
6	24,000	1,200	420	30

160,000 + 8,000 + 2,800 + 200 + 24,000 + 1,200 + 420 + 30 = 196,650

Standard Algorithm for Multiplication

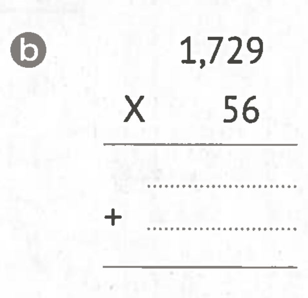
```
    1 3 2
    1 4 3
    4,275
X      46
---------
   25,650
+ 171,000
---------
  196,650
```

Partial Products Model

```
                     4,275
                 X      46
                 ---------
( 6 X       5 )         30
( 6 X      70 )  +     420
                 ---------
( 6 X     200 )  +   1,200
( 6 X   4,000 )  +  24,000
                 ---------
( 40 X      5 )        200
( 40 X     70 )      2,800
( 40 X    200 )      8,000
( 40 X  4,000 )    160,000
                 ---------
                   196,650
```

2 Find the product using the standard algorithm for multiplication:

ⓐ
```
   4,206
X     72
--------
 ......
+ ......
--------
 ......
```



ⓑ
```
   1,729
X     56
--------
 ......
+ ......
--------
 ......
```

ⓒ
```
   6,008
X     93
--------
 ......
+ ......
--------
 ......
```

3 Find the product using the area model:

a 9,472 X 53

= ....

	9,000	400	70	2
50				
3				

....

....

b 6,025 X 37

= ....

	6,000	20	5
30			
7			

....

....

c 7,008 X 28

= ....

	7,000	8
20		
8		

....

....

4 Find the product using the partial products model:

a

3,457
X 52

(........ X ....) ....
(........ X ....) + ...
(........ X ....) + ...
(........ X ....) + ...
(........ X ....) + ...
(........ X ....) + ...
(........ X ....) + ...
(........ X ....) + ...

....

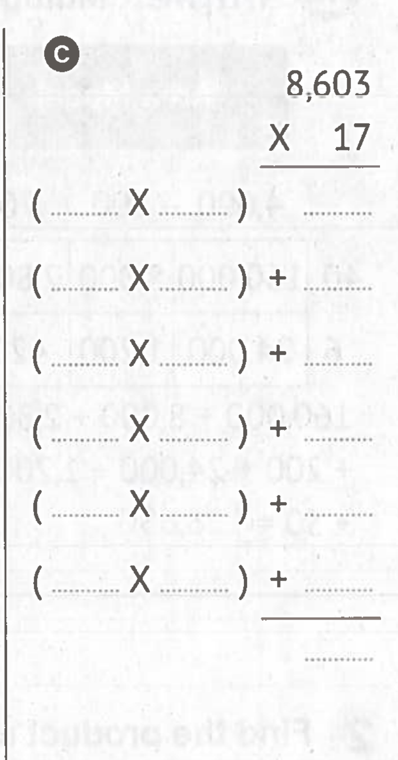
b

2,134
X 84

(........ X ....) ....
(........ X ....) + ...
(........ X ....) + ...
(........ X ....) + ...
(........ X ....) + ...
(........ X ....) + ...
(........ X ....) + ...
(........ X ....) + ...

....

c



8,603
X 17

(........ X ....) ....
(........ X ....) + ...
(........ X ....) + ...
(........ X ....) + ...
(........ X ....) + ...
(........ X ....) + ...

....

5 **Estimate the product of the multiplication, and then find the actual product. Use the strategy you prefer:**

ⓐ 3,425 X 49

Estimate: ....

Actual product: ....

The strategy used: ....

ⓑ 7,008 X 36

Estimate: ....

Actual product: ....

The strategy used: ....

6 **Answer the following:**

ⓐ Mona has a restaurant in Al-Quesyr. In February, Mona sold **402** kebabs. In March, she sold **753** kebabs. She makes each kebab with **83** grams of meat. How many grams of meat did she use in February and March?

....

....

ⓑ Mona's son, Wael, makes baklava to sell at his family's restaurant. His recipe calls for **170** grams each of pistachios, walnuts, and hazelnuts. In order to make enough for the customers, he needs to multiply his recipe by **18**. How many total grams of nuts will he need?

....

....

ⓒ For Wael's baklava syrup, he needs **250** milliliters of honey, **15** mL of orange extract, and **30** mL of lemon juice per recipe. How many total milliliters of liquid ingredients will he need for the syrup if he needs to make **18** batches?

....

....

Theme 2

Mathematical Operations and Algebraic Thinking



Units of the Theme

Unit 4 Division with Whole Numbers

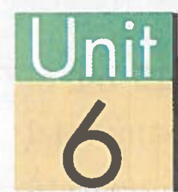
Concept 4.1: Models for Division

Concept 4.2: Dividing by 2-Digit Divisors

Unit 5 Multiplication and Division with Decimals

Concept 5.1: Multiplying Decimals

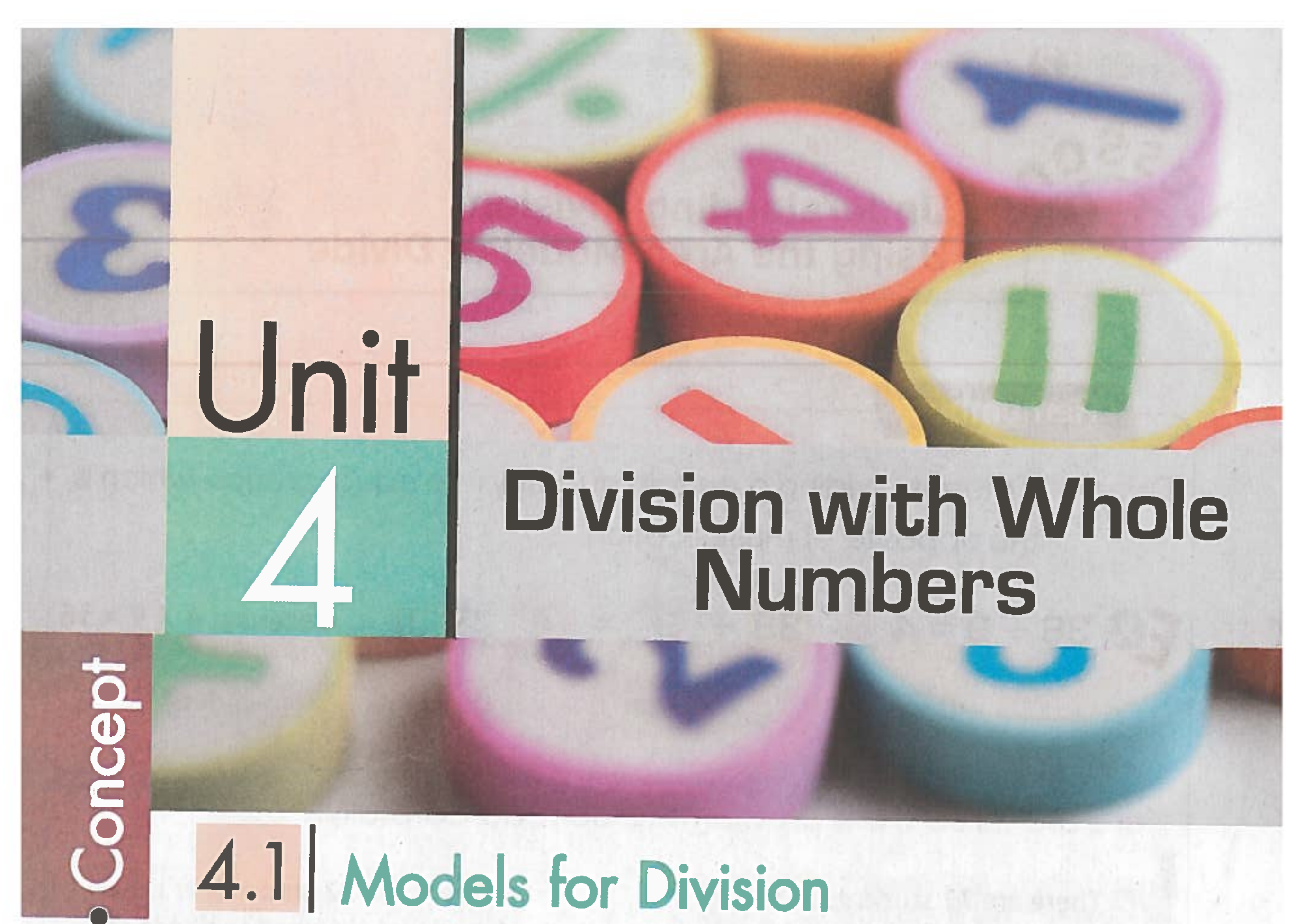
Concept 5.2: Dividing Decimals



Unit 6 Numerical Expressions and Patterns

Concept 6.1: Evaluating Numerical Expressions

Concept 6.2: Analyzing Numerical Patterns



Unit 4 Division with Whole Numbers

Concept

4.1 | Models for Division

Lessons 1&2:

Understanding Division
Using the Area Model to Divide

Learning Objectives:

By the end of these lessons, the student will be able to:

- Use story problems to explain the meaning of division problems.
- Use the area model to solve division problems.

Lessons 3&4:

Using the Partial Quotients Model to Divide
Estimating Quotients

Learning Objectives:

By the end of these lessons, the student will be able to:

- Use the partial quotients model to solve division problems.
- Use estimation to check the reasonableness of his/her answers.



Understanding Division
Using the Area Model to Divide

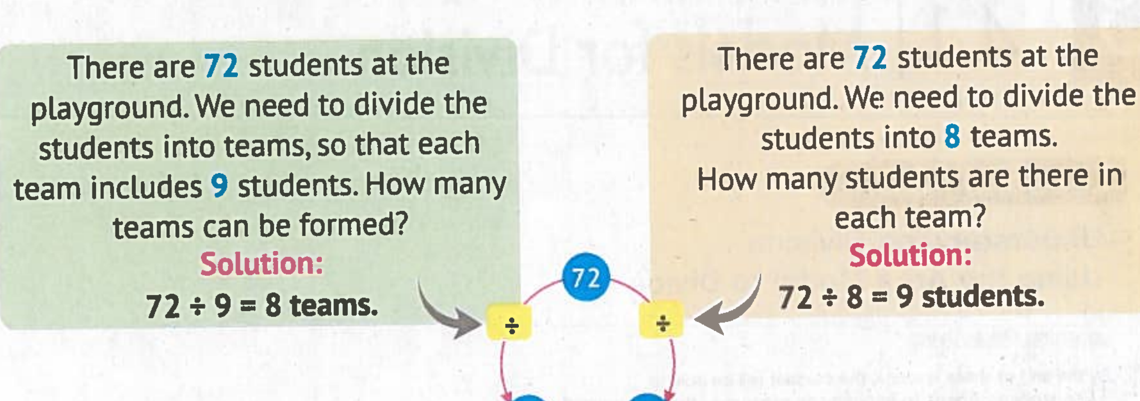
Remember

Division: It means dividing a certain quantity into equal groups, which is the opposite of multiplication.

Ex. 36 ÷ 9 = 4 & 39 ÷ 9 = 4 (R 3) Because: 4 X 9 = 36

39 → Dividend, 9 → Divisor, 4 → Quotient, (R 3) → Remainder

Here are three word problems to be read carefully:



There are 8 teams playing football, and each team has 9 players.
How many students are there in each team?

Solution:

8 x 9 = 72 students.

From the above, we note that:

- The numbers are the **same**, and the problems are all about equal teams.
  However, you can use different operations to solve each of these problems.
- **Multiplication:** things are already in equal groups.
- **Division:** things must be divided into equal groups.

1 Answer the following:

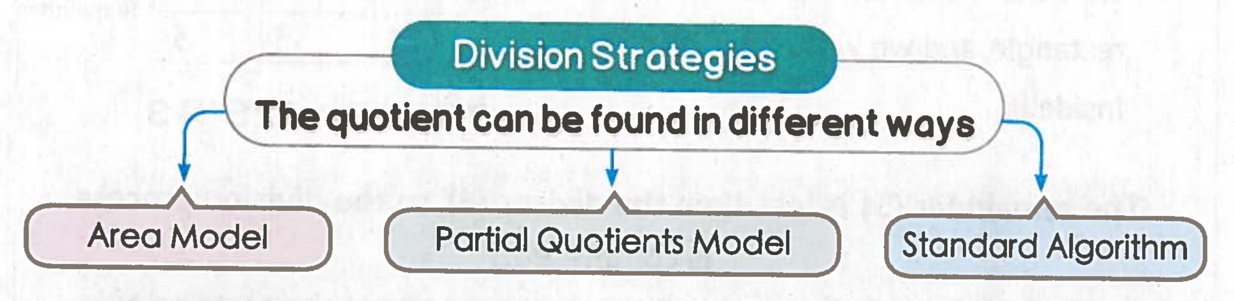
ⓐ If 18 plums are divided equally into 3 bags, then how many plums will be in each bag? ....

ⓑ 18 plums are packed in bags. If each 3 plums are put in a bag, how many bags are there?

....

ⓒ If each bag contains 6 plums, and we have 3 bags, how many plums are there?

....



Remember

Using the Area Model to Divide

Example: Divide: 753 ÷ 6

Draw a rectangle and write the divisor (6) on the left side of the rectangle.

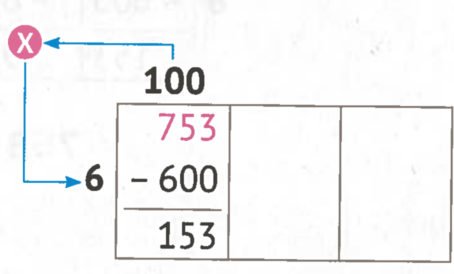
The quotient will be **between** 200 and 300.

(1) – We look for a multiple of 6, close to 753.

– We find that 600 is a multiple of 6; because 600 = 6 X 100.

– We write 100 over one part of the rectangle,

and we write 753 – 600 = 153 inside it.



(2) – We look for a multiple of 6, close to 153.

– We find that 120 is a multiple of 6; because 120 = 6 X 20.

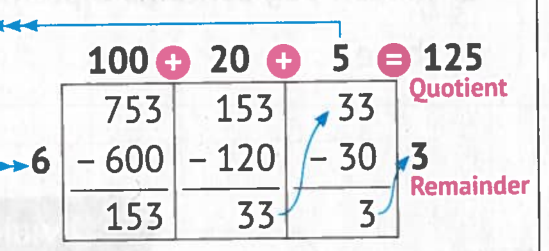
– We write 20 over another part of the rectangle, and we write 153 – 120 = 33 inside it.

	100	20
	753	153
6	– 600	– 120
	153	33

(3) – We look for a multiple of 6, close to 33.

– We find that 30 is a multiple of 6; because 30 = 6 X 5.

– We write 5 over another part of the rectangle, and we write 33 – 30 = 3 inside it.



753 ÷ 6 = 125 (R 3)

The remainder (3) is less than the divisor (6), so the division process is completed.

To find the quotient, we add the numbers above the rectangle:

100 + 20 + 5 = 125

Note that There is more than one way to use the area model to solve division problems, as in the following:

	100 +	10 +	10 +	5	= 125 Quotient
	753	153	93	33	
6	– 600	– 60	– 60	– 30	3 Remainder
	153	93	33	3	

753 ÷ 6 = 125 (R 3)

2 Divide using the **area model**:

ⓐ 763 ÷ 5

....

....

ⓑ 4,527 ÷ 9

....

....

ⓒ 6,820 ÷ 5

....

....

Learn

Dividing by a Two-Digit Number Using the Area Model

Example: Divide: 1,625 ÷ 13

We follow the same steps for dividing by a one-digit number:

(1) We look for a multiple of 13, close to the divisor 1,625.

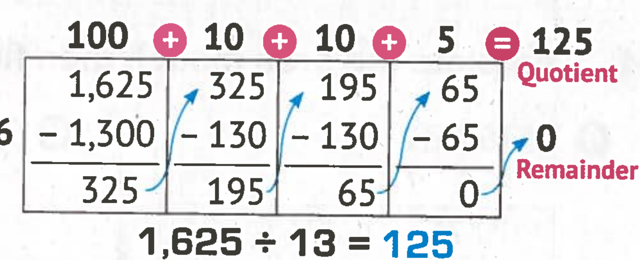
(2) We find that 100 X 13 = 1,300.

(3) We write 100 over one part of the rectangle, and we write 1,625 − 1,300 = 325 inside it.

	100 ⊕	20 ⊕	5 ⊜	125 Quotient
13	1,625	325	65	
	− 1,300	− 260	− 65	0 Remainder
	325	65	0	

1,625 ÷ 13 = 125

Another Solution



1,625 ÷ 13 = 125

• We repeat the **same steps** with the rest of the number.

Note that There is more than one way to use the area model to solve division problems, as in the following example:

Example:

Divide: 10,454 ÷ 24

	400 +	30 +	5 = 435
24	10,454 − 9,600 854	854 − 20 134	134 − 120 14

10,454 ÷ 24 = 435 (R 14)

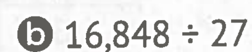
Another Solution

100 +	100 +	100 +	100 +	10 +	10 +	10 +	5 = 435
10,454 − 2,400 8,054	8,054 − 2,400 5,654	5,654 − 2,400 3,254	3,254 − 2,400 854	854 − 240 614	614 − 240 374	374 − 240 134	134 − 120 14

10,454 ÷ 24 = 435 (R 14)

3 **Divide using the area model:**

ⓐ 4,464 ÷ 36



ⓑ 16,848 ÷ 27

ⓒ 24,896 ÷ 12

4 **Complete the area model, then find the quotient:**

ⓐ 7,776 ÷ 32

	....	....	....
32	7,776 − 6,400 1,376	1,376 − 1,280 96	96 − 96 14

.... + ... + ... + ... = ...

ⓑ 9,234 ÷ 81

	100	10	2	2
81	9,234 −	.... −	.... −	.... − ....

.... + ... + ... + ... + ... = ...



Using the Partial Quotients Model to Divide
Estimating Quotients

Remember

Using the Partial Quotients Model to Divide

Example: Divide: 753 ÷ 6

(1) We write the division process as shown.

(2) – We look for a multiple of 6, close to 753.

– We find that 600 is a multiple of 6;

because 600 = 6 X 100.

– We write 100 on the right,

and subtract 753 – 600 = 153.

```
6 | 753
  – 600 | 100
    153
```

(3) – We look for a multiple of 6, close to 153.

– We find that 120 is a multiple of 6;

because 120 = 6 X 20.

– We write 20 on the right and subtract

153 – 120 = 33.

```
6 | 753
  – 600 | 100
    153
  – 120 | 20
     33
```

(4) – We look for a multiple of 6, close to 33.

– We find that 30 is a multiple of 6;

because 30 = 6 X 5.

– We write 5 on the right and subtract

33 – 30 = 3.

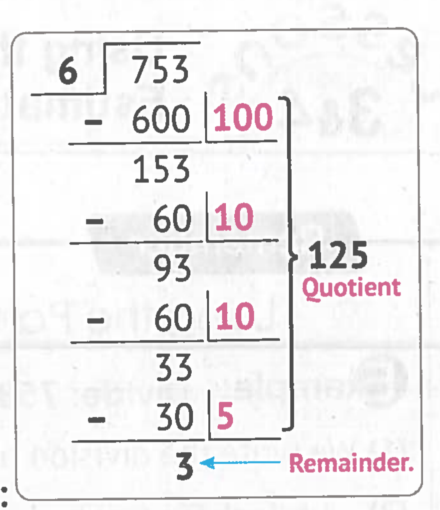
```
6 | 753
  – 600 | 100 ⎫
    153       ⎪
  – 120 | 20  ⎬ 125 Quotient
     33       ⎪
  –  30 | 5   ⎭
      3 ← Remainder
```

- The remaining number (3) is less than the divisor (6).

  Thus, the division process is completed.

- To find the quotient, we add the numbers on the right: 100 + 20 + 5 = 125.

So, 753 ÷ 6 = 125 (R 3)

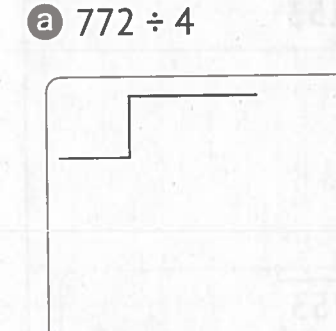


Note that There is more than one way to use the partial quotients model to solve division problems.

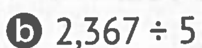
So, 753 ÷ 6 = 125 (R 3)

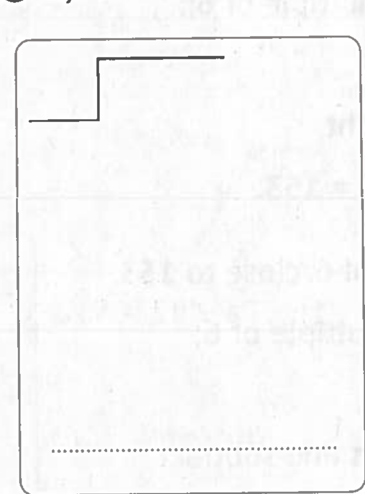
1 **Divide using the partial quotients model:**

ⓐ 772 ÷ 4

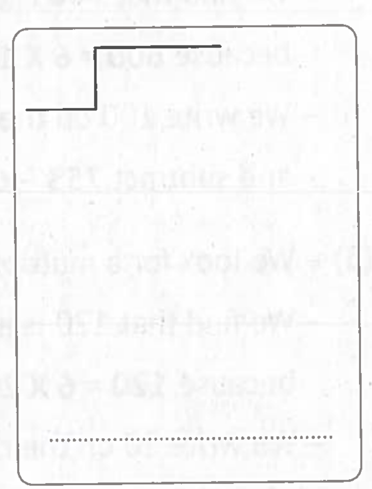


ⓑ 2,367 ÷ 5





ⓒ 8,314 ÷ 6



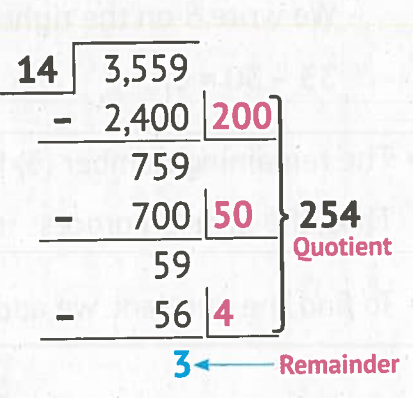
Learn

Dividing by a Two-Digit Number Using the Partial Quotients Model

Example: Divide: 3,559 ÷ 14

We follow the same steps for dividing by a one-digit number:

- – We look for a multiple of 14, close to the divisor 3,559.
  – We find that 200 X 14 = 2,800.
  – We write 200 on the right and subtract 3,559 – 2,800 = 759.
  – We repeat the same steps with the rest of the number.

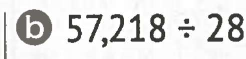


So, 3,559 ÷ 14 = 254 (R 3)

Note that There is more than one way to use the partial quotients model to solve division problems, as in the following example.

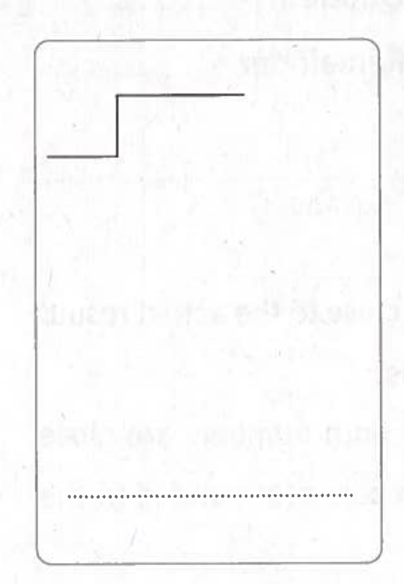
Example: Divide: 16,884 ÷ 42

Method 1	Method 2	Method 3
42 ⟌ 16,884	42 ⟌ 16,884	42 ⟌ 16,884
− 16,800 → 400	− 8,400 → 200	− 8,400 → 200
84	8,484	8,484
− 84 → 2	− 8,400 → 200	− 4,200 → 100
0	84	4,284
	− 84 → 2	− 4,284 → 100
	0	84
		− 84 → 2
		0

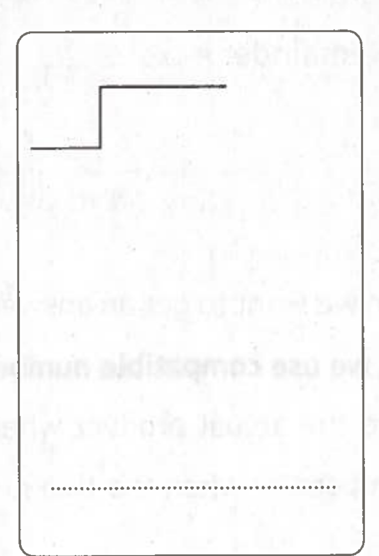

So, 16,884 ÷ 42 = 402

2 Divide using the partial quotients model:

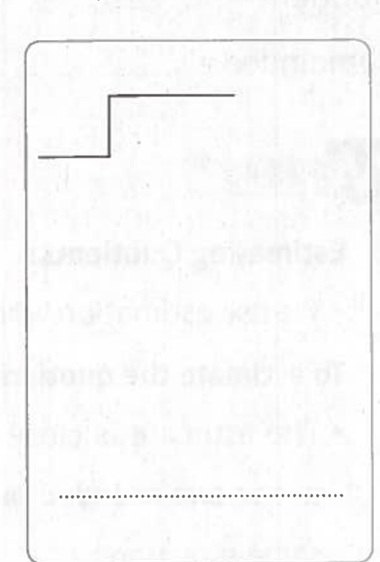
ⓐ 18,144 ÷ 56



ⓑ 57,218 ÷ 28



ⓒ 84,420 ÷ 84



3 Complete each **partial quotients model**, then find the quotient:

a 2,727 ÷ 23

23 ⟌ 2,727	
− 2,300	....
427	
− 230	....
197	
− 69	....
128	
− 69	....
59	
− 46	....
13	

Quotient = ...

Remainder = ...

b 2,451 ÷ 3

3 ⟌ 2,451	
−	800
51	
− 30	....
21	
−	....
0	

Quotient = ...

Remainder = ...

c 8,063 ÷ 60

60 ⟌ 8,063	
−	100
2,063	
−	30
263	
−	4
23	

Quotient = ...

Remainder = ...

Notes

Estimating Quotients:

- We use estimation when we want to get an answer **close** to the actual result.

To estimate the quotient, we use compatible numbers:

- The estimate is close to the actual product when both numbers are close to the **two rounded numbers**, or when the two numbers are rounded in the same direction.

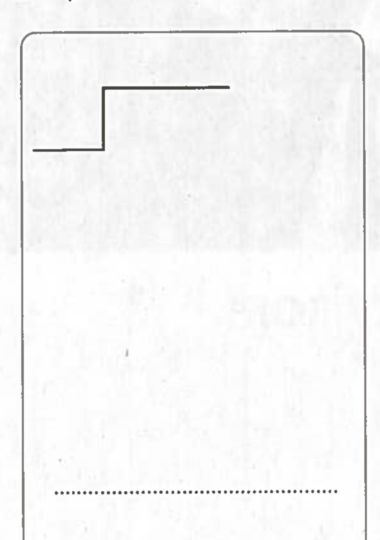

12,192 ÷ 24 = 508 and the estimate is 10,000 ÷ 20 = 500

- The estimate is far from the actual result when a number is rounded **up** and another number is rounded **down**.


27,032 ÷ 62 = 436 and the estimate is 30,000 ÷ 60 = 500

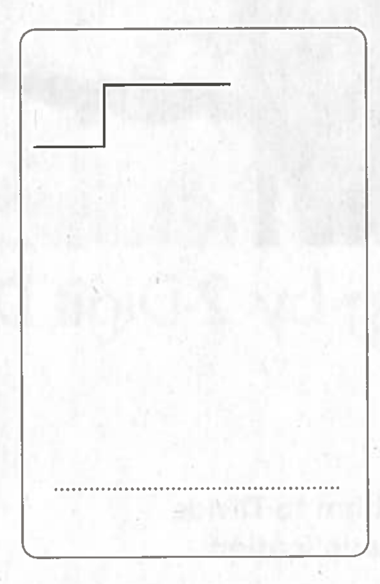
4 **Estimate the quotient, then find the actual result. Use the strategy you prefer:**

ⓐ 7,800 ÷ 24



Estimate = ...
Solution = ...

ⓑ 27,232 ÷ 53



Estimate = ...
Solution = ...

ⓒ 6,648 ÷ 12

Estimate = ...
Solution = ...



Concept

4.2 | Dividing by 2-Digit Divisors

Lessons 5-7:

Using the Standard Algorithm to Divide
Checking Division with Multiplication
Multistep Story Problems

Learning Objectives:

By the end of these lessons, the student will be able to:

- Use the standard algorithm to divide by a 2-digit divisor.
- Use multiplication to check answers to division problems.
- Solve multistep story problems involving whole numbers and the four operations.



Lessons 5-7 Using the Standard Algorithm to Divide, Checking Division with Multiplication, Multistep Story Problems

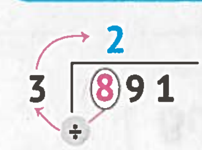
Remember

Using the Standard Algorithm to Divide

Example: Divide: 891 ÷ 3

The steps of the division process:





- **First Step: Divide** — $8 \div 3 = 2$, write 2 over the 8.
- **Second Step: Multiply** — $2 \times 3 = 6$, write 6 under the 8.
- **Third Step: Subtract** — $8 - 6 = 2$.
- **Fourth Step: Drop the next digit** — bring down the 9 to get 29.

We repeat the same steps

Divide: 29 ÷ 3	Divide: 21 ÷ 3
Multiply: 9 X 3	Multiply: 7 X 3
Subtract: 29 – 27	Subtract: 21 – 21
Drop the digit: 1	

```
    2 9 7
3 ) 8 9 1
  - 6
    2 9
  - 2 7
      2 1
    - 2 1
        0
```

So, 891 ÷ 3 = 297

Note that Multiplication and division are **inverse operations**, so we can use multiplication to check the result of division.

From the previous example:

297 X 3 = 891, where the product of multiplication is equal to the divisor, so the quotient is true.



Example:

Divide: 859 ÷ 8

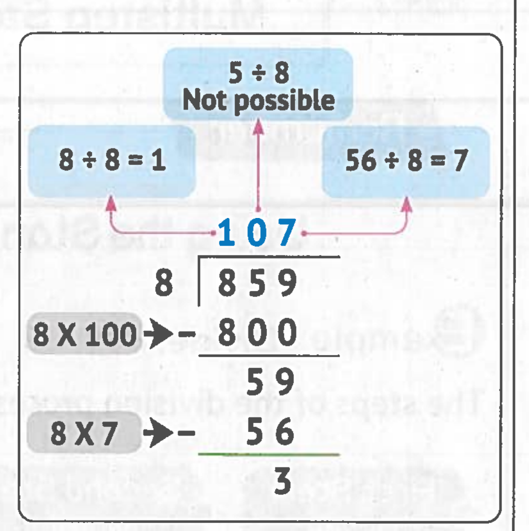
(Using the standard division algorithm)

- **Note that:** When dividing 5 ÷ 8, division is **not possible** because 5 < 8.

So: We put **0** over the digit **5**, and we divide **5** and **9** together: 59 ÷ 8.

Thus: 859 ÷ 8 = 107 (R 3)

Check: (107 X 8) + 3 = 859



Learn

Dividing by a Two-Digit Number Using the Standard Division Algorithm

Create a multiplication table for the divisor to help you:

46 X 1 = 46

46 X 2 = 92

46 X 3 = 138

46 X 4 = 184

46 X 5 = 230

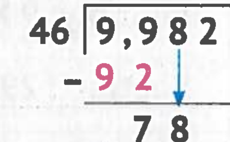
46 X 7 = 322

1 **Starting from the left, we find that:**

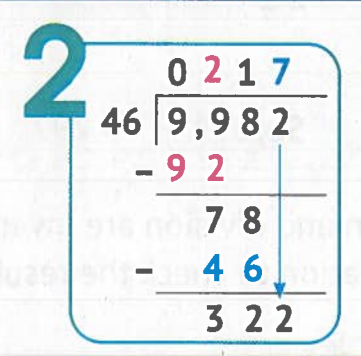
9 < 46, so we divide **99 ÷ 64.**

With the help of the previous table, **we find that:**

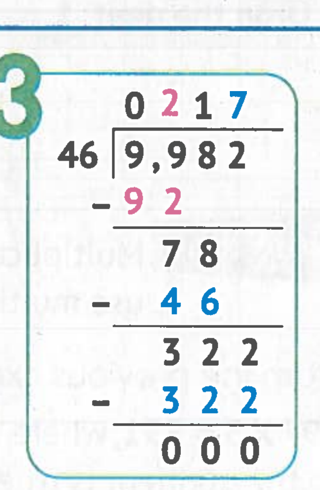
The nearest multiple of 46 to **99** is **46 x 2 = 92.**



2



3

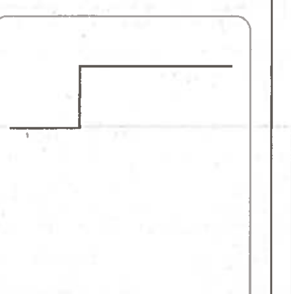


So: 9,982 ÷ 46 = 217

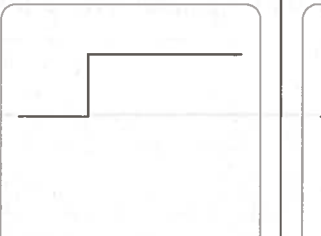
Check: 217 X 46 = 9,982

1 Divide using the standard division algorithm:

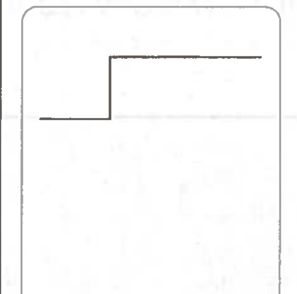
ⓐ 7,85 ÷ 5



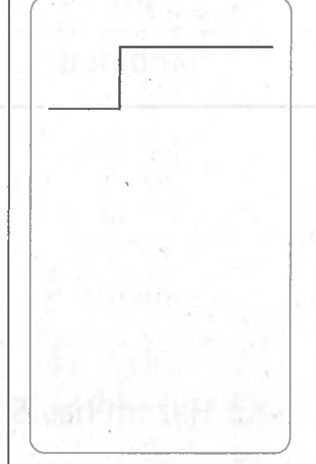
ⓑ 2,598 ÷ 4



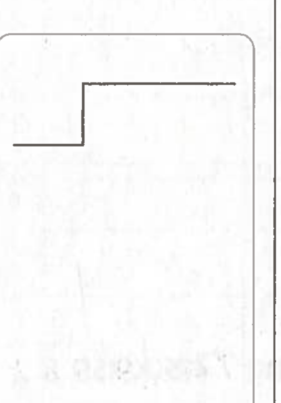
ⓒ 3,565 ÷ 3



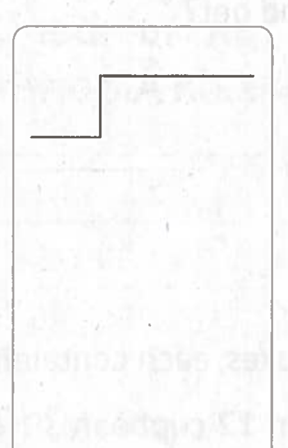
ⓓ 9,628 ÷ 8



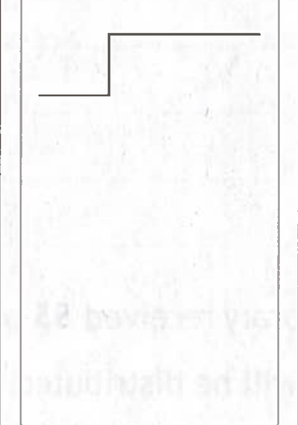
ⓔ 1,449 ÷ 63



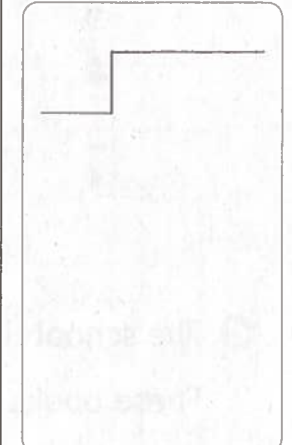
ⓕ 44,032 ÷ 42



ⓖ 4,884 ÷ 24



ⓗ 77,834 ÷ 37



2 Answer the following:

ⓐ In her cafe, Rana sells cakes that were baked in a bakery. Rana received an order to deliver **350** cakes. She put the cakes in bags, **12** cakes each. Find the number of bags.

....

....

....

b) Computer Depot sold **762** reams of paper. Paper Palace sold **3 times** as much paper as Computer Depot and **143** reams more than Office Supply Central. How many reams of paper were sold by all three stores combined?

....

....

....

....

c) Hazem has **5** boxes of red pens, each with **24** pens, and **4** boxes of blue pens, each with **12** pens.

Hazem wants to distribute the pens evenly among **8** of his friends.

How many pencils will each friend get?

....

....

....

....

d) The school library received **55** boxes, each containing **72** books.

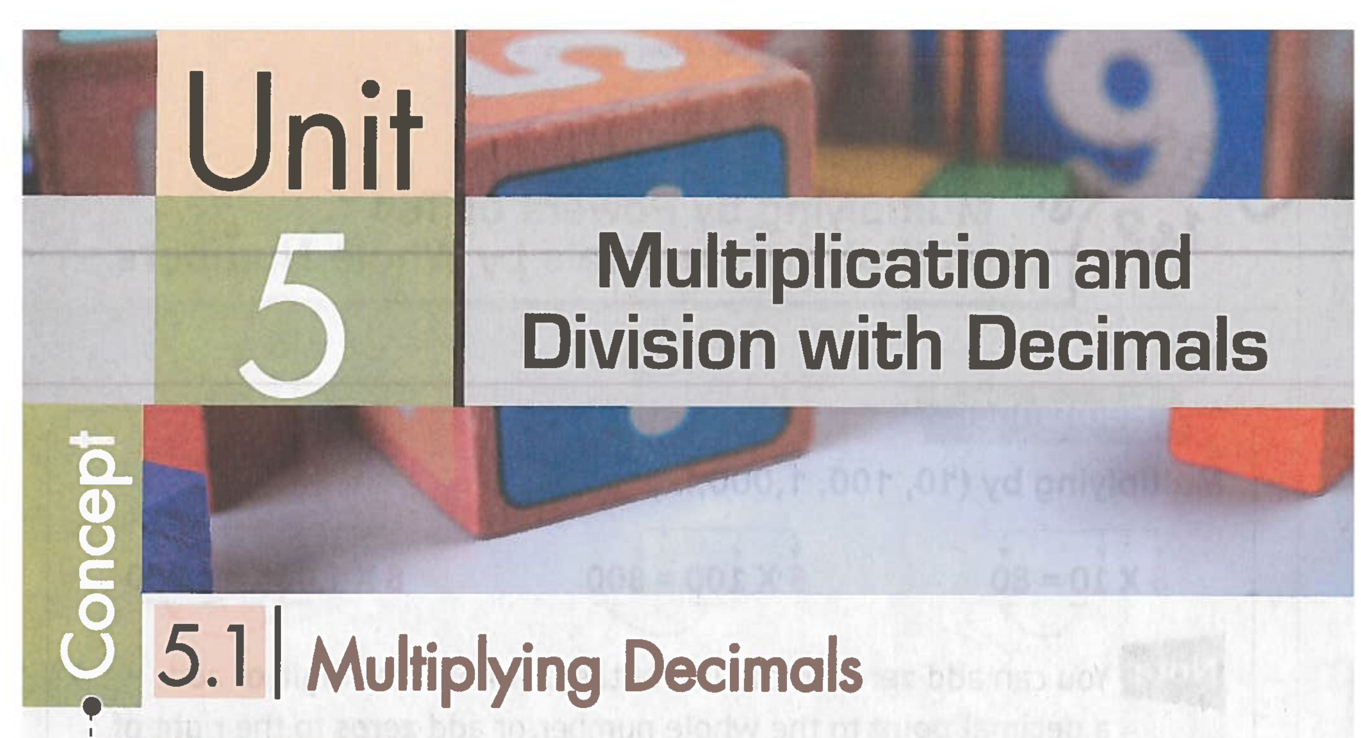
These books will be distributed in **12** cupboards. How many books will be in each cupboard?

....

....

....

....



Unit 5

Multiplication and Division with Decimals

Concept

5.1 | Multiplying Decimals

Lessons 1&2: Multiplying by Powers of Ten / Multiplying Decimals by Whole Numbers

Learning Objectives:

By the end of these lessons, the student will be able to:

- Explain patterns when multiplying whole numbers by powers of ten.
- Multiply a decimal by a whole number.

Lessons 3-5: Multiplying Tenths by Tenths / Estimating Decimal Products / Using the Area Model to Multiply Decimals

Learning Objectives:

By the end of these lessons, the student will be able to:

- Use models to represent multiplying decimals.
- Explain patterns when multiplying Tenths by Tenths.
- Estimate products of decimals.
- Use the area model to multiply decimals.

Lessons 6&7: Multiplying Decimals through the Hundredths Place / Multiplying Decimals through the Thousandths Place

Learning Objectives:

By the end of these lessons, the student will be able to:

- Use the standard algorithm to multiply decimals through the Hundredths place.
- Use the standard algorithm to multiply decimals through the Thousandths place.
- Use estimation to check the reasonableness of his/her answers.

Lessons 8-10: Decimals and the Metric System / Measurement, Decimals, and Powers of Ten / Solving Multistep Story Problems

Learning Objectives:

By the end of these lessons, the student will be able to:

- Explain relationships between the metric system and decimals.
- Use decimals to represent equivalent measurements.
- Relate converting measurements in the metric system to multiplying by powers of ten.
- Solve multistep story problems involving addition, subtraction, and multiplication of decimals.



Multiplying by Powers of Ten
Multiplying Decimals by Whole Numbers

Remember

Multiplying by (10, 100, 1,000,...)

8 X 10 = 80   8 X 100 = 800   8 X 1,000 = 8,000

Note You can add **zeros** to the left of the last non-zero digit, or add a **decimal point** to the whole number, or add **zeros** to the right of the decimal point without changing the value of the number.

Example: 0008 = 008 = 08 = 8 = 8.0 = 8.00 = 8.000

Learn

Multiplying by (10, 100, 1,000,...)

8.0 X 10 = 80	When multiplying by 10, 100, or 1,000, move the decimal point to the **right** with the same number of **zeros**.	3.45 × 10 = 34.5
8.00 X 100 = 800		3.45 × 100 = 345
8.000 X 1,000 = 8,000		3.45 × 1,000 = 3,450

Multiplying by (0.1, 0.01, 0.001,...)

8. × 0.1 = 0.8	When multiplying by 0.1, 0.01, or 0.001, move the decimal point to the **left** by the same number of **decimal parts**.	21.7 × 0.1 = 2.17
8. × 0.01 = 0.08		21.7 × 0.01 = 0.217
8. × 0.001 = 0.008		21.7 × 0.001 = 0.0217

The place of the whole number cannot be left blank, a "0" is added to save its place.

1 Complete the following patterns:

ⓐ

9 X 1,000 = ...
9 X 100 = ...
9 X 10 = ...
9 X 0.1 = ...
9 X 0.01 = ...
9 X 0.001 = ...

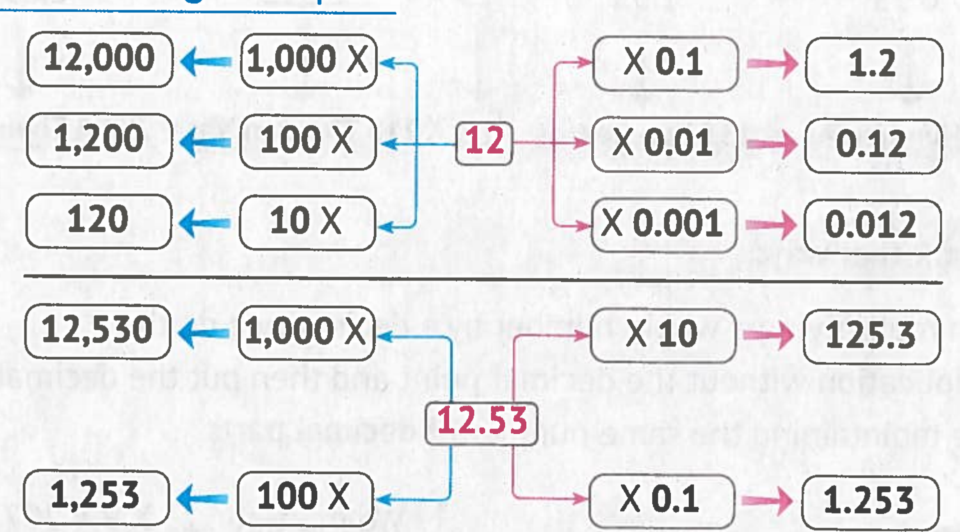
ⓑ

1.2 X 1,000 = ...
1.2 X 100 = ...
1.2 X 10 = ...
1.2 X 0.1 = ...
1.2 X 0.01 = ...
1.2 X 0.001 = ...

ⓒ

23.5 X 1,000= ....
23.5 X 100 = ...
23.5 X 10 = ...
23.5 X 0.1 = ...
23.5 X 0.01 = ...
23.5 X 0.001 = ...

Note the following examples:



2 Complete the following:

ⓐ 4.2 X 10 = ...
ⓑ 360 X 0.1 = ...
ⓒ 7.4 X 0.01 = ...
ⓓ 1.245 X 100 = ...
ⓔ 602.1 X 0.01 = ...
ⓕ 14.14 X 0.1 = ...
ⓖ 0.2 X 100 = ...
ⓗ 1.3 X 0.1 = ...
ⓘ 12 X 0.001 = ...

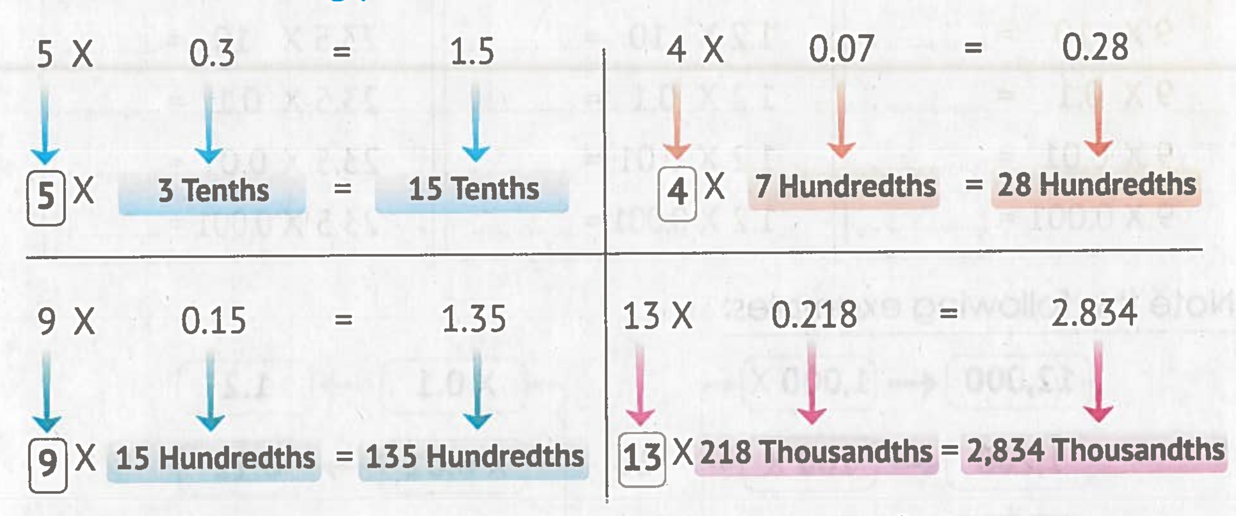
3 Complete the following table:

X	10	100	1,000	1	0.1	0.01	0.001
3	....	....	....	....	....	....	....
30	....	....	....	....	....	....	....
0.3	....	....	....	....	....	....	....

Learn

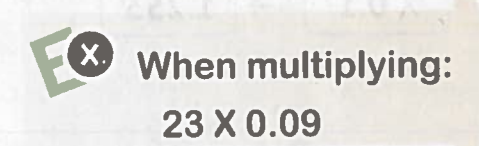
Multiplying Decimals by Whole Numbers

Note the following pattern:



In another way:

When multiplying a whole number by a decimal, we do the multiplication **without** the decimal point and then put the decimal point while maintaining the same number of **decimal parts**.



① We multiply: 23 X 9 = 207
② Then we put the decimal point after **two** digits (2.09).

So, 23 X 0.09 = 2.07

4 Find the product of:

ⓐ 0.2 X 8 = ...

ⓑ 0.07 X 8 = ...

ⓒ 9 X 0.009 = ...

ⓓ 7 X 1.2 = ...

ⓔ 6 X 0.39 = ...

ⓕ 9.07 X 8 = ...

ⓖ 0.142 X 5 = ...

ⓗ 0.025 X 8 = ...

ⓘ 0.125 X 12 = ...

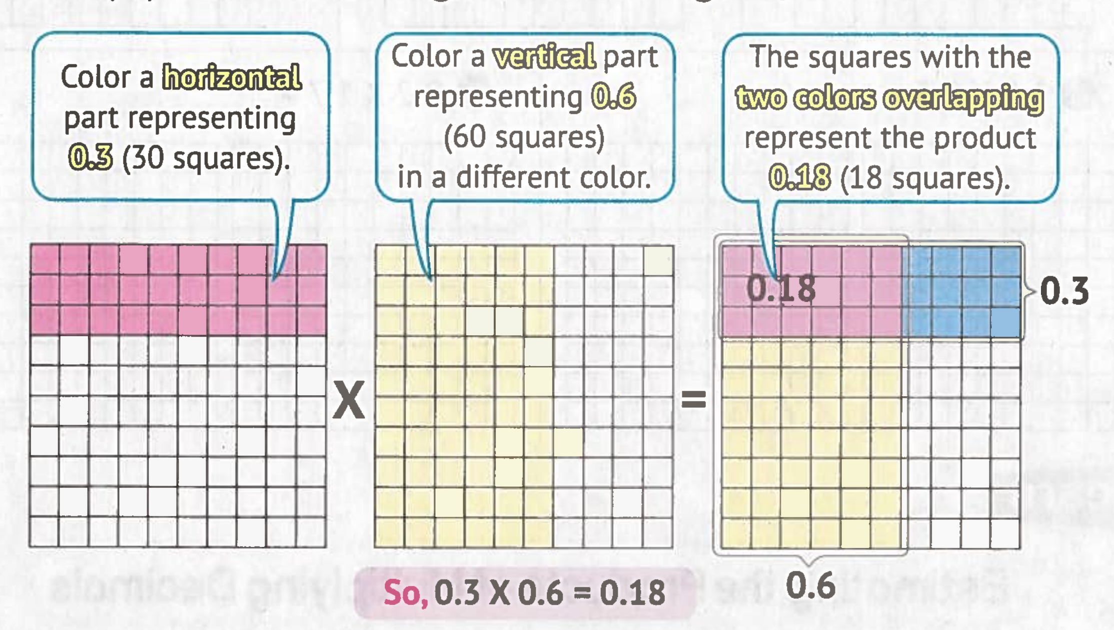


Multiplying Tenths by Tenths
Estimating Decimal Products
Using the Area Model to Multiply Decimals

Learn

Multiplying Decimals with Arrays (The Base 10 Grids)

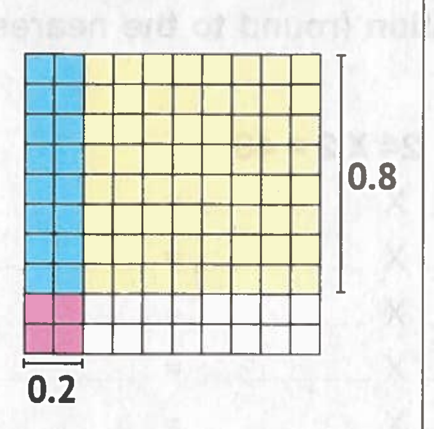
To multiply: 0.3 x 0.6 (using the Base 10 grids)



So, 0.3 X 0.6 = 0.18

Examples:

ⓐ 0.8 × 0.2 = 0.16

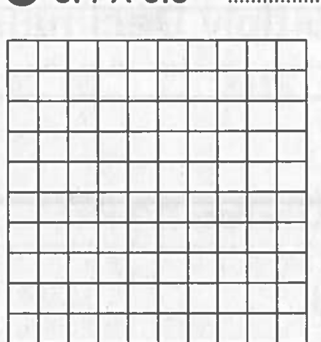


ⓑ 0.2 × 1.7 = 0.34

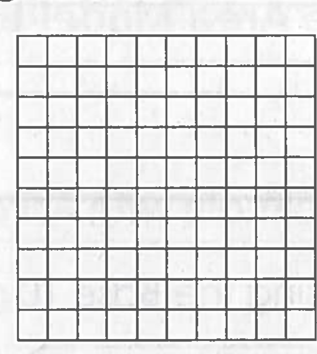


1 Use the **Base 10 grids** to find the product:

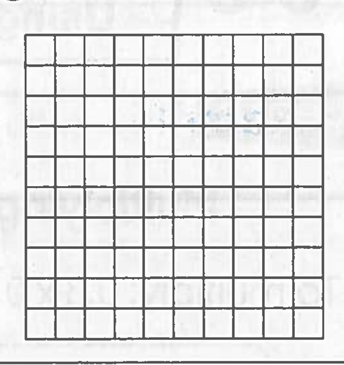
ⓐ 0.4 X 0.8 = ...



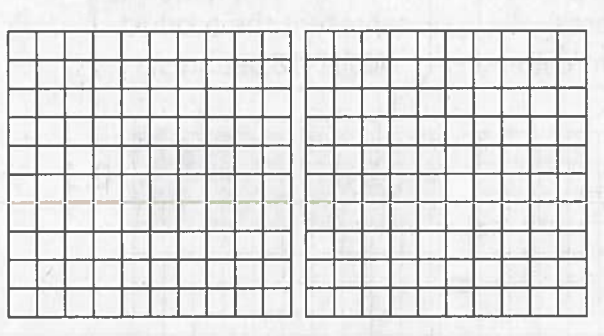
ⓑ 0.3 X 0.9 = ...



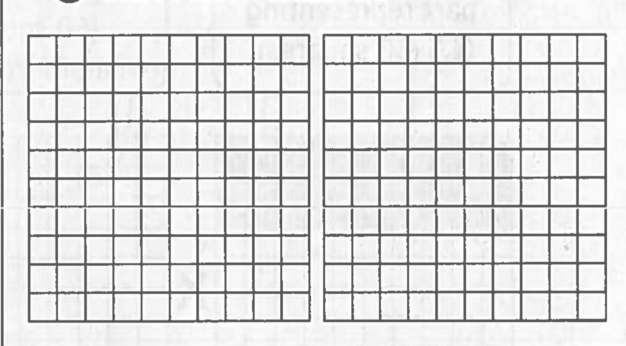
ⓒ 0.7 X 0.2 = ...



ⓓ 1.5 X 0.5 = ...



ⓔ 0.2 X 1.7 = ...



Learn

Estimating the Products of Multiplying Decimals

To estimate decimals, round both numbers to the nearest whole number, and then multiply.

2 **Estimate the product of the multiplication (round to the nearest whole number) as in the example:**

Example: **24.3 × 1.8** → **Estimate: 24 X 2 = 48**



ⓐ 28.2 × 11.5 → Estimate: .... X .... = ...

ⓑ 499.6 × 12.7 → Estimate: .... X .... = ...

ⓒ 558.25 × 99.6 → Estimate: .... X .... = ...

ⓓ 6,649.9 × 0.8 → Estimate: .... X .... = ...

ⓔ 7.471 × 33.6 → Estimate: .... X .... = ...

ⓕ 8,450.321 × 2.2 → Estimate: .... X .... = ...



Using the Area Model to Multiply Decimals

Example: Multiply using the **area model**:

ⓐ **3.24 X 5.2**

3.24 X 5.2 = 15 + 1 + 0.2 + 0.6

+ 0.04 + 0.008 = 16.848

	3	0.2	0.04
5	15	1	0.2
0.2	0.6	0.04	0.008

ⓑ **3.8 × 0.27**

3.8 X 0.27 = 0.6 + 0.16 + 0.21 + 0.056

= 1.026

	3	0.8
0.2	0.6	0.16
0.07	0.21	0.056

3 **Multiply using the area model:**

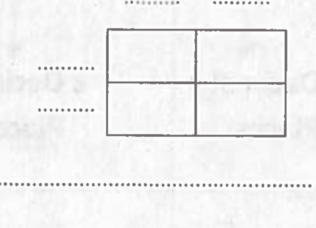
ⓐ 0.8 X 2.7

	....	....
....		

....

....

ⓑ 4.2 X 3.6



	....	....
....		
....		

....

....

ⓒ 7.4 X 27.3

	....	....	....
....			
....			

....

....



Multiplying Decimals through the Hundredths Place
Multiplying Decimals through the Thousandths Place

Learn

Using the Standard Algorithm to Multiply Decimals

Example: Multiply: (a) 32.5 X 7.3 (b) 3.25 X 7.3 (c) 3.25 X 73 (d) 32.5 X 73

- Multiply the **two numbers** without the decimals.
- Put the decimal point in the result from the **right**, after the number of digits equal to the sum of the decimal places in the two numbers before the multiplication.

$$\begin{array}{r} \overset{13}{\not 1} \\ 3\,2\,5 \\ \times\quad 7\,3 \\ \hline 9\,7\,5 \\ +\;22.750 \\ \hline 23.725 \end{array}$$

(a) 32.5 X 7.3 = 237.25
1 Decimal Place, 1 Decimal Place = 2 Decimal Places

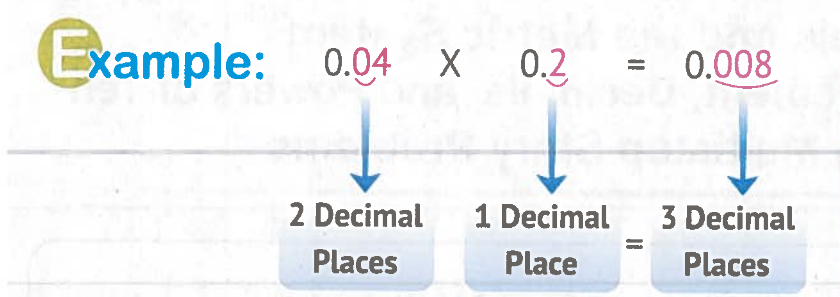
(b) 3.25 X 7.3 = 23.725
2 Decimal Places, 1 Decimal Place = 3 Decimal Places

(c) 3.25 X 73 = 237.25
2 Decimal Places, No Decimal Places = 2 Decimal Places

(d) 32.5 X 73 = 2372.5
1 Decimal Place, No Decimal Places = 1 Decimal Place

Note

- If the number of digits of the product is **less than** the sum of the number of decimal places, add **zeros** by the amount of increment to the **left** of the resulting number, and then put the decimal point.



4 X 2 = 8, the product of multiplication is one digit, and we need 3 digits, so we add two **zeros** and then put the decimal point.

1 Use the **standard algorithm** to multiply (24 X 13), then complete:

ⓐ 2.4 X 13 = ...
ⓑ 24 X 1.3 = ...
ⓒ 2.4 X 1.3 = ...
ⓓ 0.24 X 1.3 = ...
ⓔ 2.4 X 0.13 = ...
ⓕ 2.4 X 130 = ...
ⓖ 0. 24 X 13 = ...
ⓗ 0.24 X 0.13 = ...

```
     24
X    13
---------
 ........
+........
---------
 ........
```

2 Use the **standard algorithm** to multiply:

ⓐ
```
     3.56
X     2.5
---------
 ........
+........
---------
 ........
```

ⓑ
```
    2.369
X    0.34
---------
 ........
+........
---------
 ........
```

ⓒ
```
    56.32
X     1.3
---------
 ........
+........
---------
 ........
```

ⓓ
```
    2.036
X    0.02
---------
 ........
+........
---------
 ........
```



Decimals and the Metric System
Measurement, Decimals, and Powers of Ten
Solving Multistep Story Problems

Remember

Length Measurement Units

Millimeter (mm) → Centimeter (cm): x 0.1
Centimeter (cm) → Millimeter (mm): x 10
Centimeter (cm) → Decimeter (dm): x 0.1
Decimeter (dm) → Centimeter (cm): x 10
Decimeter (dm) → Meter (m): x 0.1
Meter (m) → Decimeter (dm): x 10
Centimeter (cm) → Meter (m): x 0.01
Meter (m) → Centimeter (cm): x 100
Meter (m) → Kilometer (km): x 0.001
Kilometer (km) → Meter (m): x 1,000

Capacity Measurement Units

Milliliter (mL) → Liter (L): x 0.001
Liter (L) → Milliliter (mL): x 1,000

Mass Measurement Units

Gram (gm) → Kilogram (kg): x 0.001
Kilogram (kg) → Gram (gm): x 1,000

1 **Complete, as in the examples:**

Examples: 10,870 gm = 10,870 X 0.001 = 10.870 kg

45.62 m = 45.62 X 100 = 4,562 cm

ⓐ 3,465 mL = ... X .... = ... L.

ⓑ 245 cm = ... X .... = ... m.

ⓒ 0.7 m = ... X .... = ... cm.

ⓓ 7.56 dm = ... X .... = ... cm.

ⓔ 25,378 gm = ... X .... = ... kg.

(f) 56.89 L = ... X .... = ... mL.

(g) 56 m = ... X .... = ... km.

2 Answer the following:

(a) Rania is a nurse in a hospital. She is getting wrap bandages from the storage closet for her patients. She needs **1.35** meters of bandages for each of her **4** patients. How many meters does she need?

....

....

....

(b) Dalia made **a liter** of sugar cane juice. She drank **320** milliliters. Her father drank **0.25** liters. How much sugar cane juice is remaining? (In litres)

....

....

....

(c) Ehab wants to know how much he has grown this year. In January, he was **138.2** centimeters. By the end of the year, he was **1.5** meters tall. How much did Ehab grow this year? (In centimeters)

....

....

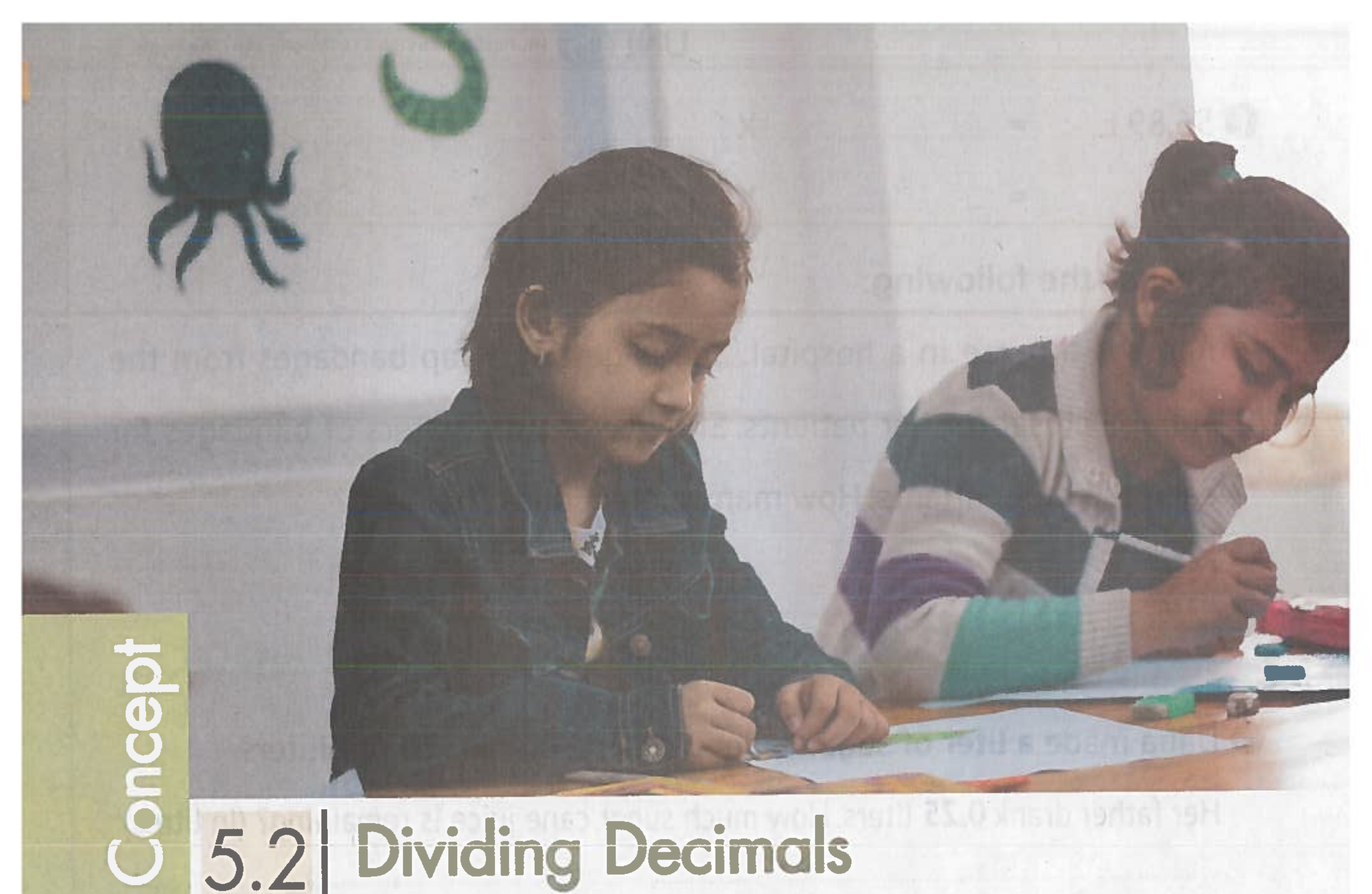
....

(d) Marwan is designing a new circuit board for the computer he is repairing. The old circuit board measured **7.25** centimeters by **36** millimeters. He planned for the new circuit board to be **80** mm by **5.5** cm. What is the difference in area of the circuit boards? (In centimeters)

....

....

....



Concept

5.2 | Dividing Decimals

Lessons 11–13:

Dividing by Powers of Ten
Patterns and Relationships in Powers of Ten
Modeling Decimal Division

Learning Objectives:

By the end of these lessons, the student will be able to:
- Explain patterns he/she notices when dividing by powers of 10.
- Make connections between multiplying and dividing by powers of ten.
- Explain the meaning of decimal division problems.
- Use models to represent decimal division.

Lessons 14–17:

Estimating Decimal Quotients
Dividing Decimals by Whole Numbers
Dividing Decimals by Decimals
Solving Challenging Multistep Story Problems

Learning Objectives:

By the end of these lessons, the student will be able to:
- Estimate quotients of decimal division problems.
- Use the standard algorithm to divide decimals through the Thousandths place.
- Use estimation to check the reasonableness of his/her answers.
- Solve multistep story problems involving addition, subtraction, multiplication, and division of decimals.



Dividing by Powers of Ten
Patterns and Relationships in Powers of Ten
Modeling Decimal Division

Learn

Dividing by (10, 100, 1,000, ...)

8. ÷ 10 = 0.8
8. ÷ 100 = 0.08
8. ÷ 1,000 = 0.008

When dividing by 10, 100, or 1,000, move the decimal point to the **left** with the same number of **zeros**.

24.36 ÷ 10 = 2.436
24.36 ÷ 100 = 0.2436
24.36 ÷ 1,000 = 0.02436

Dividing by (0.1, 0.01, 0.001, ...)

8. ÷ 0.1 = 80
8. ÷ 0.01 = 800
8. ÷ 0.001 = 8,000

When dividing by 0.1, 0.01, or 0.001, move the decimal point to the **right** with the same number of **decimal parts**.

24.36 ÷ 0.1 = 243.6
24.36 ÷ 0.01 = 2,436
24.36 ÷ 0.001 = 24,360

The whole number place cannot be left blank, so "0" is added to save its place.

1 **Complete the following patterns:**

a

9 ÷ 1,000 = ...
9 ÷ 100 = ...
9 ÷ 10 = ...
9 ÷ 0.1 = ...
9 ÷ 0.01 = ...
9 ÷ 0.001 = ...

b

1.42 ÷ 1,000 = ...
1.42 ÷ 100 = ...
1.42 ÷ 10 = ...
1.42 ÷ 0.1 = ...
1.42 ÷ 0.01 = ...
1.42 ÷ 0.001 = ...

c

230 ÷ 1,000 = ...
230 ÷ 100 = ...
230 ÷ 10 = ...
230 ÷ 0.1 = ...
230 ÷ 0.01 = ...
230 ÷ 0.001 = ...

2 **Divide:**

a) 800 ÷ 1,000 = ...
b) 6,700 ÷ 100 = ...
c) 5.7 ÷ 0.1 = ...
d) 2.16 ÷ 0.01 = ...
e) 71 ÷ 1,000 = ...
f) 12.8 ÷ 0.01 = ...

3 **Complete the following:**

a) 0.4 ÷ .... = 0.04
b) 0.4 ÷ .... = 400
c) 29.08 ÷ .... = 290.8
d) .... ÷ 0.01 = 10.230
e) .... ÷ 1,000 =2.5
f) .... ÷ 0.001 = 20,000

Learn

Metric Conversions with Multiplication and Division

Note

Multiplying by (0.1, 0.01, 0.001 ...) **is equivalent to** Dividing by (10, 100, 1.00 ...)

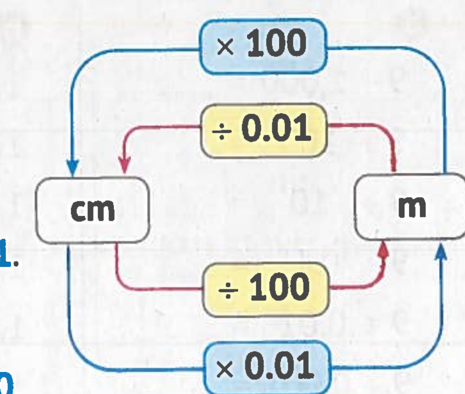
2.5 X 0.1 = **0.25** , 2.5 ÷ 10 = **0.25** → 2.5 X 0.1 = 2.5 ÷ 10 = 0.25

Multiplying by (10, 100, 1.00 ...) **is equivalent to** Dividing by (0.1, 0.01, 0.001 ...)

2.5 X 10 = **25** , 2.5 ÷ 0.1 = **25** → 2.5 X 10 = 2.5 ÷ 0.1 = 25

From the above, we find that:

– When converting from one measurement unit to another, you can use multiplication or division.





Note the corresponding figure:

– To convert from meters to centimeters, you can multiply by **100** or divide by **0.01**.

– To convert from centimeters to meters, you can multiply by **0.01** or divide by **100**.

4 Complete each **conversion**. Then, write a **multiplication equation** and a **division equation** with the same answer:

Ex 45 mm = **4.5** cm. 45 X **0.1** = **4.5** 45 ÷ **10** = **4.5**	**a** 4.65 m = ... cm. 4.65 X .... = ... 4.65 ÷ .... = ...
b 5.6 kg = ... gm. 5.6 X .... = ... 5.6 ÷ .... = ...	**c** 42 dm = ... cm. 42 X .... = ... 42 ÷ .... = ...
d 0.02 l = ... ml. 0.02 X .... = ... 0.02 ÷ .... = ...	**e** 235 m = ... km. 235 X .... = ... 235 ÷ .... = ...

Learn

Modeling Decimal Division

Example (1): Divide: 2.4 ÷ 0.4

Note the corresponding figure, where each column represents 0.1.

2.4

0.4 0.4 0.4 0.4 0.4 0.4

- 2.4 consists of two squares, each consisting of 10 columns, in addition to 4 other columns (24 columns).

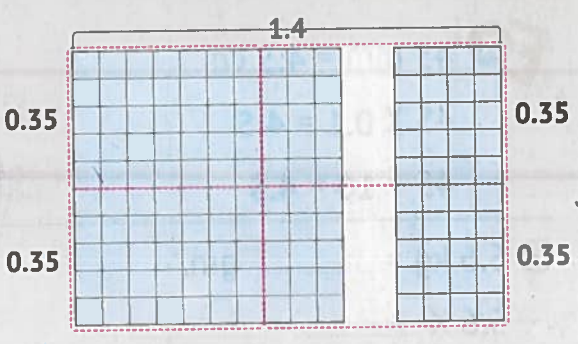


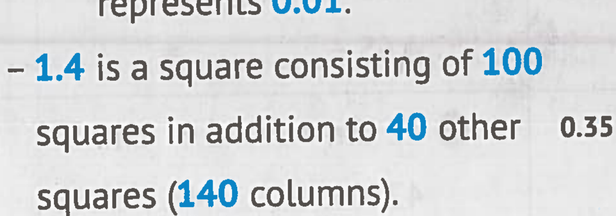
- 0.4 is 4 columns.
- Dividing 2.4 by 0.4 means how many groups of 0.4 by 2.4.
- We find that there are 6 groups, each consisting of 4 columns (0.4), (24 ÷ 4 = 6).

So, 2.4 ÷ 0.4 = 6

Example (2): Divide: 1.4 ÷ 0.35

Note the corresponding figure, where each square represents 0.01.





– 1.4 is a square consisting of 100 squares in addition to 40 other squares (140 columns).

– 0.35 is 35 squares.

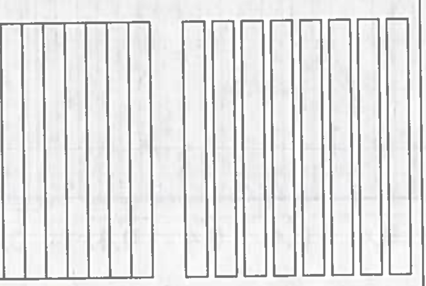
– Dividing 1.4 by 0.45 means how many groups of 0.35 by 1.4.

– We find that there are 4 groups, each consisting of 35 squares (0.35), (140 ÷ 35 = 4).

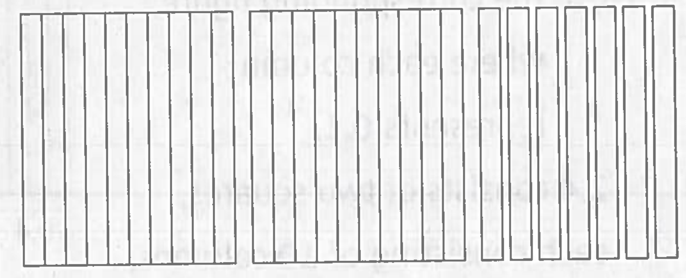
So, 1.4 ÷ 0.35 = 4

5 Use the **Base 10 blocks** to model the following problems:

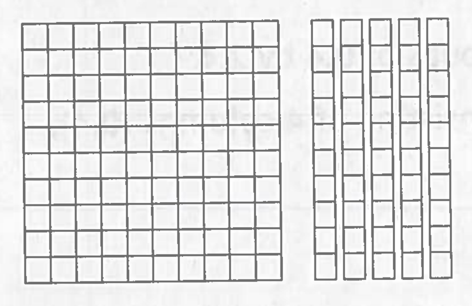
ⓐ 1.8 ÷ 0.3 = ...



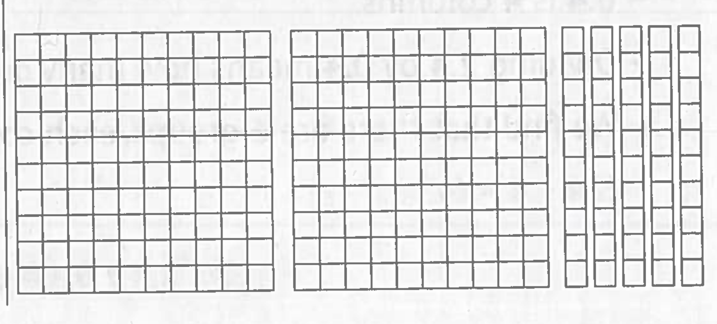
ⓑ 2.7 ÷ 0.9 = ...



ⓒ 1.5 ÷ 0.15 = ...



ⓓ 2.5 ÷ 0.25 = ...





Estimating Decimal Quotients
Dividing Decimals by Whole Numbers
Dividing Decimals by Decimals
Solving Challenging Multistep Story Problems

Learn

Estimating Decimal Quotients

Example: Estimate: 45.64 ÷ 6.87

Round the dividend to the nearest compatible whole number (a number that is divisible by the divisor after rounding).
The number 45.64 lies between 42 and 49.

45.64 ÷ 6.87

Round the divisor to the nearest whole number:
6.87 ≈ 7

If you use 42, the estimate will be of a lower value: **42 ÷ 7 = 6.**
If you use 49, the estimate will be of a larger value: **49 ÷ 7 = 7.**

1 **Estimate the decimal quotients in each of the following:**

ⓐ 31.79 ÷ 9.35

Estimate .... ÷ .... = ... or .... ÷ .... = ...

ⓑ 22.12 ÷ 4.98

Estimate .... ÷ .... = ... or .... ÷ .... = ...

ⓒ 10.17 ÷ 3.25

Estimate .... ÷ .... = ... or .... ÷ .... = ...

ⓓ 43.35 ÷ 5

Estimate .... ÷ .... = ... or .... ÷ .... = ...

ⓔ 62.31 ÷ 8.52

Estimate .... ÷ .... = ... or .... ÷ .... = ...

2 **Emad, an electrician, is the project manager for an upcoming construction project. He needs to find estimates for various projects on site. Read through each problem and estimate the answer:**

	Problem	Estimation
a	A team of workers excavates **15.84** cubic meters of dirt each hour. How long will it take them to excavate **78.1** m^3 of dirt?	....
b	The frame of the building will be made of **25.3** metric tons (t) of concrete and **52.8** t of steel. What is the total mass of the frame of the building?	....
c	Each floor of the building needs **28.3** meters of plastic piping. The team has a total of **314.58** m of piping. How many floors can they fit with the piping?	....
d	Each steel joist can support **224.6** kilograms of weight. How much weight can **10** steel joists support?	....

Learn

Dividing Decimals by Whole Numbers

– Assume that the two numbers are **whole numbers** and do the division.
– Put the decimal point in the result in the same position as the **dividend**.

Examples: **Divide:**

ⓐ 273.6 ÷ 8 = **34.2**

```
      034.2
  8 ) 273.6
    - 24
       33
    -  32
        1 6
    -   1 6
          0
```

ⓑ 281.76 ÷ 12 = **23.48**

```
       023.48
  12 ) 281.76
     - 24
        41
     -  36
         5 7
     -   4 8
           9 6
     -     9 6
           0 0
```

ⓒ 71.872 ÷ 32 = **2.246**

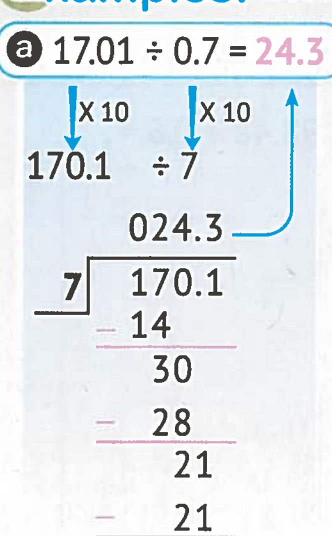
```
       02.246
  32 ) 71.872
     - 64
        7 8
     -  6 4
        1 47
     -  1 28
           192
     -     192
             0
```

Dividing Decimals by Decimals

- Convert the divisor into a whole number: by moving the decimal point to the **right** (by multiplying by 10, 100, or 1,000...) according to the number of decimal places in the **divisor**.
- Move the decimal point to the **right** in the dividend by the same number of digits moved in the divisor.
- You may need to add **zeros** to the right of the divisor sometimes.
- Perform the division operation.

Examples: Divide:

ⓐ 17.01 ÷ 0.7 = 24.3



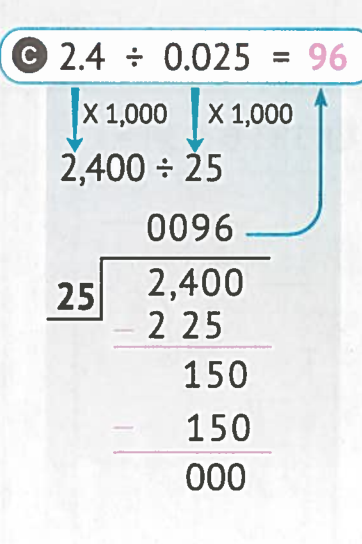
ⓑ 8.4 ÷ 0.24 = 35

X 100 X 100

840 ÷ 24

```
      035
24 | 840
   - 72
     120
   - 120
       0
```

ⓒ 2.4 ÷ 0.025 = 96



Notes

Sometimes we may need to add a decimal point and an addition to complete the division process, as in the following examples:

1 When dividing 462 ÷ 12,
the quotient is 38 and the remainder is 6, so we add the decimal point and 0 to the dividend to complete the division (**456 ÷ 12 = 38.5**).

2 When dividing 97 ÷ 4,
the quotient is 24 and the remainder is 1, so we add the decimal point and 0 to the dividend twice to complete the division (**97 ÷ 4 = 24.25**).

1

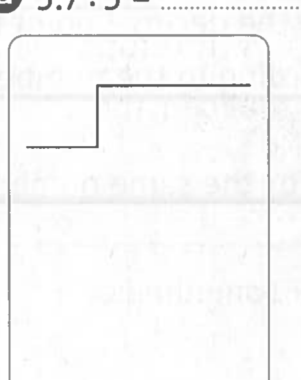
```
      038.5
12 | 462.0
   - 36
     102
   -  96
       6 0
   -   6 0
         0
```

2

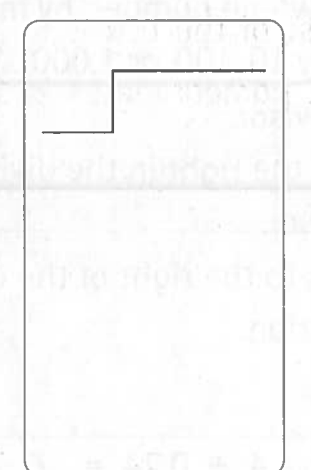
```
     24.25
4 | 97.00
  - 8
    17
  - 16
     1 0
  -    8
      20
  -   20
       0
```

3 Use the standard algorithm to divide:

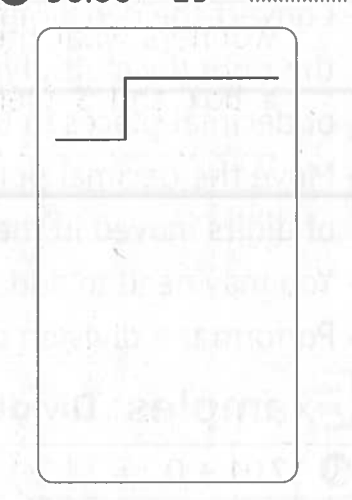
ⓐ 5.7÷3 = ...



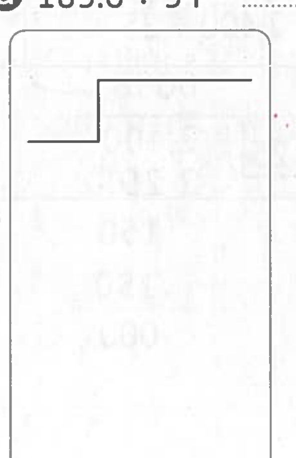
ⓑ 42.85÷5 = ...



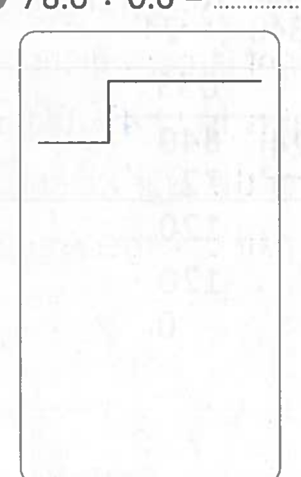
ⓒ 36.66 ÷ 13 = ...



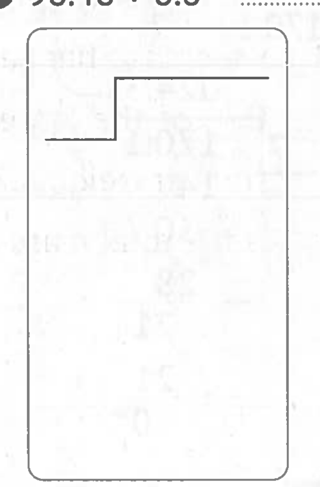
ⓓ 183.6 ÷ 34 = ...



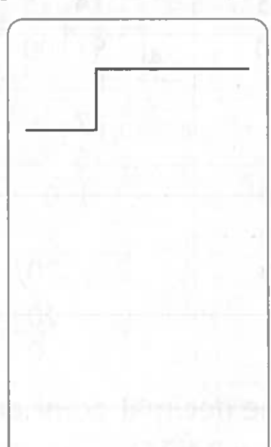
ⓔ 78.6 ÷ 0.6 = ...



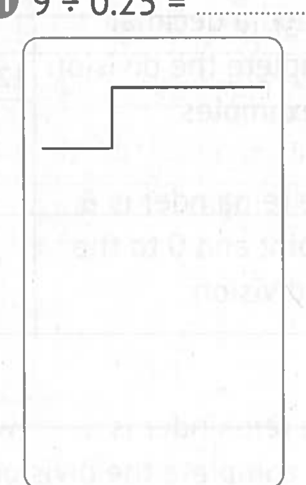
ⓕ 98.48 ÷ 0.8 = ...



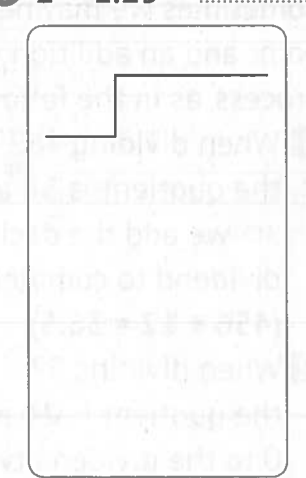
ⓖ 8.395 ÷ 0.23 = ...



ⓗ 9 ÷ 0.25 = ...



ⓘ 2 ÷ 1.25 = ...



4 Answer the following:

a. Abdallah buys the sturdiest boxes for the products at his market. He wonders what the mass of the box is in kilograms. The total mass of **a box** and **3** identical pomegranates is **1.03** kg. When the identical pomegranates in the box are **tripled**, the total mass is **2.29** kg. What is the mass of one of Abdallah's empty boxes?

....

....

....

....

b. Samira is training for her weightlifting competition. She attaches **4** weights to her bar, a pair of larger weights and a pair of smaller weights. One of the larger weights is **12.4** kilograms heavier than one of the smaller weights. Together the four weights have a mass of **100** kg. What is the total mass of the pair of larger weights?

....

....

....

....

c. Basem is having a sale at his sweets shop. One chocolate candy is **1.95** LE. He will provide **2** free candies for every **10** bought. A customer wants to buy **100** candies for an event. How much will the customer spend?

....

....

....

....

....

ⓓ As part of her fitness training, Samira cycles 42.12 kilometers in 2 hours.

If she cycles at the same rate the entire time, how far will she travel in 1 hour?

Give your answer in kilometers and meters using whole numbers.

.... km.

.... m.

ⓔ Magdy is filling identical vases with water for flower arrangements at the florist. He pours 18 liters and 250 milliliters equally into 24 vases. When he is finished, Magdy still has 0.85 L of water left.

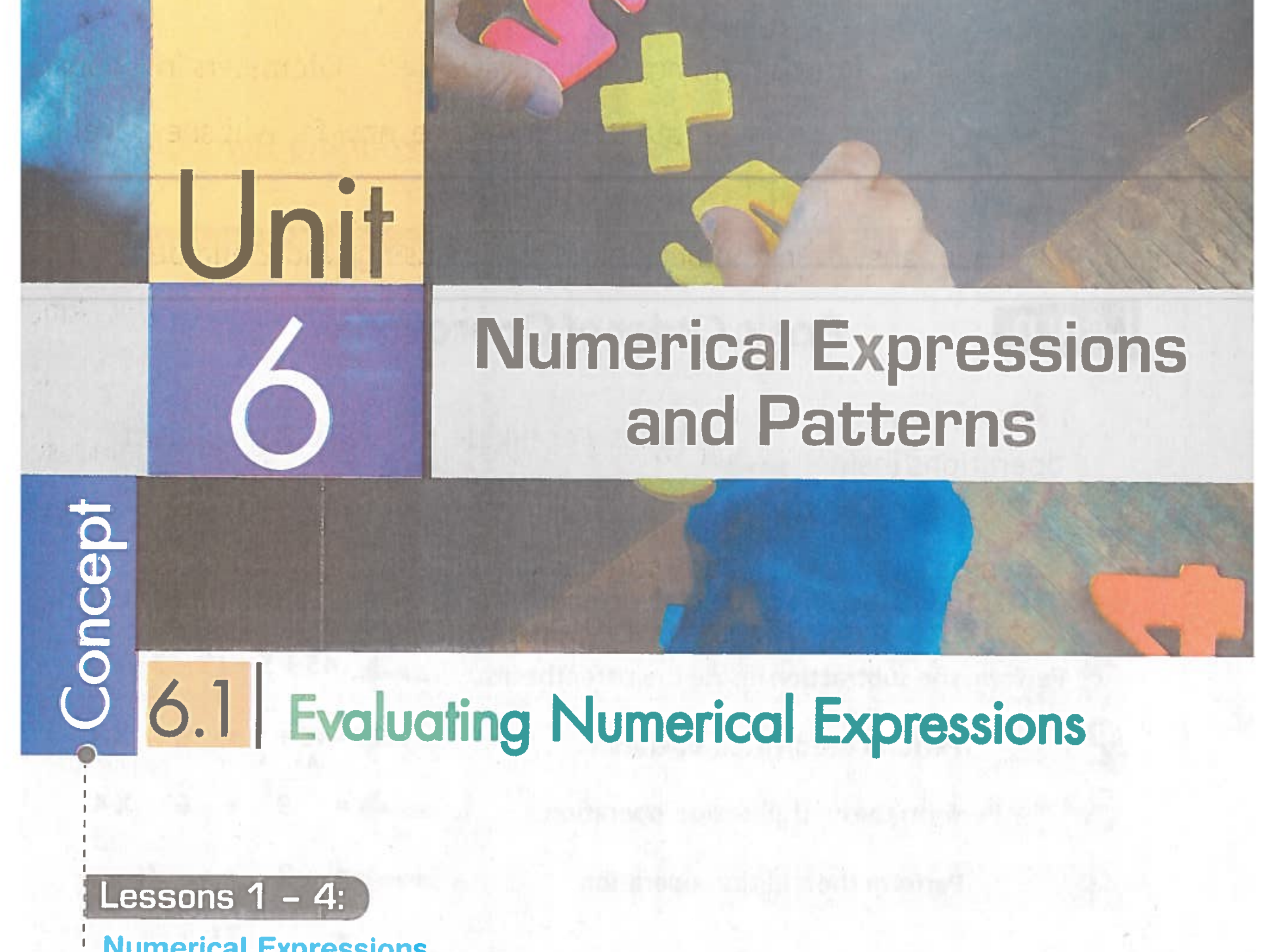
How much water is in each vase? Give your answer in liters.

....

....

....

....



6.1 Evaluating Numerical Expressions

Lessons 1 – 4:

Numerical Expressions
Numerical Expressions with Grouping Symbols
Placing Grouping Symbols
Writing Expressions to Represent Scenarios

Learning Objectives:

By the end of these lessons, the student will be able to:

- Use the order of operations to evaluate expressions with whole numbers and decimals.
- Identify how grouping symbols affect the order of operations.
- Evaluate an expression with grouping symbols.
- Evaluate expressions with grouping symbols.
- Place grouping symbols in expressions to generate given values.
- Write an expression to represent a written scenario.



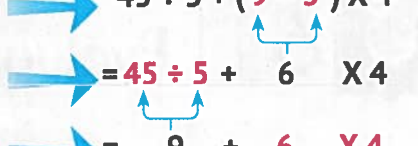
Numerical Expressions
Numerical Expressions with Grouping Symbols
Placing Grouping Symbols
Writing Expressions to Represent Scenarios

Learn

Basic Order of Operations

Perform operations inside parentheses if any → Multiply or divide from left to right → Add or subtract from left to right

Example: Use the order of operations to evaluate the expression:



1. Perform the subtraction inside the parentheses. → $45 \div 5 + (9 - 3) \times 4$
2. Perform the division operation. → $= 45 \div 5 + 6 \times 4$
3. Perform the multiplication operation. → $= 9 + 6 \times 4$
4. Perform the addition operation. → $= 9 + 24$

$= 33$

1 Use the order of operations to evaluate each expression, one step at a time:

ⓐ $597.8 \div 6.1 + 13 \times 1.7$

= ....

= ....

= ....

= ....

ⓑ $56.5 \times 2.3 - 15 + 12.7$

= ....

= ....

= ....

= ....

ⓒ $82.43 \times 3.1 + 4.05 \div 0.01 - 2.5$

= ....

= ....

= ....

= ....

ⓓ $90.7 + 116.6 \times 0.1 \times 2 - 20$

= ....

= ....

= ....

= ....

ⓔ $(14.5 - 12.3 \div 0.01) + 9.8$

= ....

= ....

= ....

= ....

ⓕ $(45.42 - 17.11) \times (82.9 + 17.1)$

= ....

= ....

= ....

= ....



Expanded Order of Operations

Operations within parentheses ( )	→	Operations within brackets [ ]	→	Operations outside of parentheses or brackets
1 Multiply or divide from left to right		1 Multiply or divide from left to right		1 Multiply or divide from left to right
2 Add or subtract from left to right		2 Add or subtract from left to right		2 Add or subtract from left to right

Example: Use the **order of operations** to evaluate the expression:

ⓐ Operations within parentheses ( ) → 3.5 X [1.4 ÷ (7.5 + 2.5) – 0.04] + 2.84

ⓑ Operations within brackets [ ]
- 1 Division → = 3.5 X [1.4 ÷ 10 – 0.04] + 2.84
- 2 Subtraction → = 3.5 X [0.14 – 0.04] + 2.84

ⓒ Operations outside of brackets
- 1 Multiplication → = 3.5 X 0.1 + 2.84
- 2 Addition → = 3.5 + 2.84 = 3.19

2 Use the **order of operations** to evaluate each expression:

ⓐ 2.5 ÷ [0.5 X (4.3 – 4.2)] – 2.4
= ....
= ....
= ....
= ....

ⓑ [8.4 ÷ (3.6 + 0.4) X 3] + 2.7
= ....
= ....
= ....
= ....

ⓒ 7.5 X [4 – (7.6 + 2.4) X 0.2]
= ....
= ....
= ....
= ....

ⓓ [(2.5 – 0.1) X (0.07 + 0.03)] ÷ 1.2
= ....
= ....
= ....
= ....

Note

Changing the **order of operations** leads to a change in the value.
Note the following examples:

ⓐ 10 – 0.1 X 1.6 + 2
= 10 – 0.16 + 2
= 9.84 + 2
= 11.84

ⓑ 10 – 0.1 X (1.6 + 2)
= 10 – 0.1 X 3.6
= 10 – 0.36
= 9.64

ⓒ (10 – 0.1) X (1.6 + 2)
= 9.9 X (1.6 + 2)
= 9.9 X 3.6
= 35.64

3 **Use the order of operations to evaluate each expression:**

ⓐ 30 X 2.5 + 47.18 − 3.12 ÷ 0.1

= ....

= ....

= ....

= ....

ⓑ 30 X (2.5 + 47.18 − 3.12 ÷ 0.1)

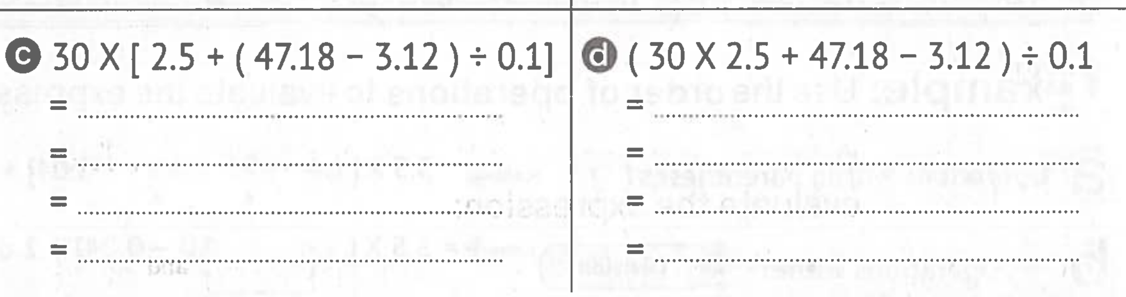
= ....

= ....

= ....

= ....

ⓒ 30 X [2.5 + (47.18 − 3.12) ÷ 0.1]



= ....

= ....

= ....

= ....

ⓓ (30 X 2.5 + 47.18 − 3.12) ÷ 0.1

= ....

= ....

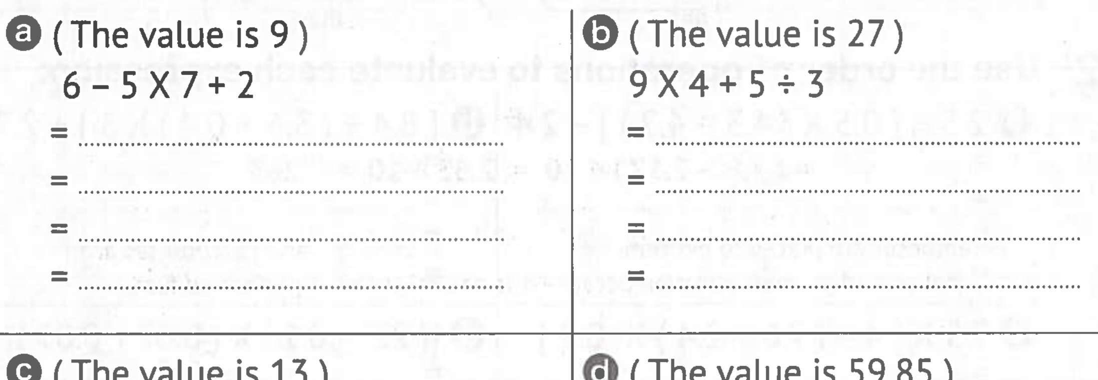
= ....

= ....

4 **Place grouping symbols (parentheses and/or brackets) in the expressions to generate the given values. Sometimes grouping symbols are not needed.**

ⓐ (The value is 9)

6 − 5 X 7 + 2



= ....

= ....

= ....

= ....

ⓑ (The value is 27)

9 X 4 + 5 ÷ 3

= ....

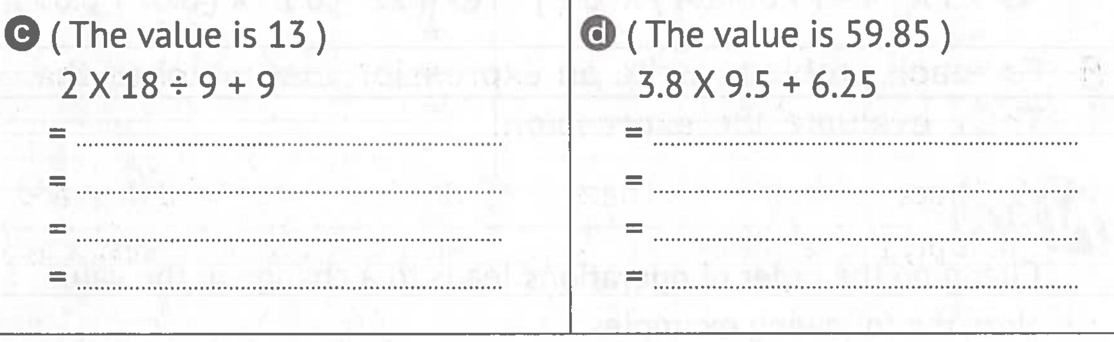
= ....

= ....

= ....

ⓒ (The value is 13)

2 X 18 ÷ 9 + 9



= ....

= ....

= ....

= ....

ⓓ (The value is 59.85)

3.8 X 9.5 + 6.25

= ....

= ....

= ....

= ....

ⓔ (The value is 42.35) 3.8 X 9.5 + 6.25

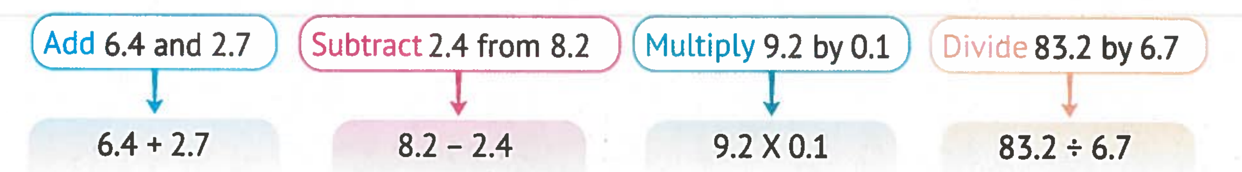
= ....

= ....

= ....

= ....


Learn


Writing Expressions to Represent Scenarios

Note the following mathematical expressions:

Add 6.4 and 2.7	Subtract 2.4 from 8.2	Multiply 9.2 by 0.1	Divide 83.2 by 6.7
6.4 + 2.7	8.2 − 2.4	9.2 X 0.1	83.2 ÷ 6.7

Example: Write an expression that matches the clues. Then, evaluate the expression:

Subtract 3.5 from 7.2 and divide the result by 10.

Parentheses are used if the first operation is **subtraction or addition**.

(7.2 − 3.5) ÷ 10
= 3.7 ÷ 10 = 0.37

Multiply 2.5 by 0.1 and add 3.2

No parentheses are needed if the first operation is **multiplication or division**.

(2.5 x 0.1) + 3.2
= 0.25 + 3.2 = 3.45

Multiply 217 by 0.01 and subtract the result from 4.8, then divide by 10.

(4.8 − 217 X 0.01) ÷ 10
= (4.8 − 2.17) ÷ 10 = 2.63 ÷ 10 = 0.263

Parentheses are placed to perform **subtraction before division**, and parentheses are not placed for multiplication because it is natural that it is performed first.

5 **For each problem, write an expression that matches the clues. Then, evaluate the expression:**

a) Subtract 3.1 from 4.62. Then, multiply the result by 2.

....
....
....
....
....

b) Divide 93 by 0.3 and then add 114.7. After that, divide the result by 5.

....
....
....
....
....

ⓒ Add 30.4, 87 and 17.5. Then, subtract the result from 224.7. Multiply by 100.

....

....

....

....

....

ⓓ Multiply 7.6 by 100. Next, subtract 34.3. Then, add 12.4. Finally, divide the result by 0.1.

....

....

....

....

....

ⓔ Find the difference between 10 and 9.27. Multiply by the sum of 54 and 46. Then, divide 1,168 by the result.

....

....

....

....

6 For each problem, write an expression that matches the scenario. Then, evaluate the expression:

ⓐ Kamel is saving money to buy a car. He currently has 1,000 LE. He begins working two jobs. At his first job, he saves 50 LE a week. At his second job, he saves 30 LE a week. He saves the money from his jobs for 4 weeks to add to his savings. How much does Kamel have saved at the end of the 4 weeks?

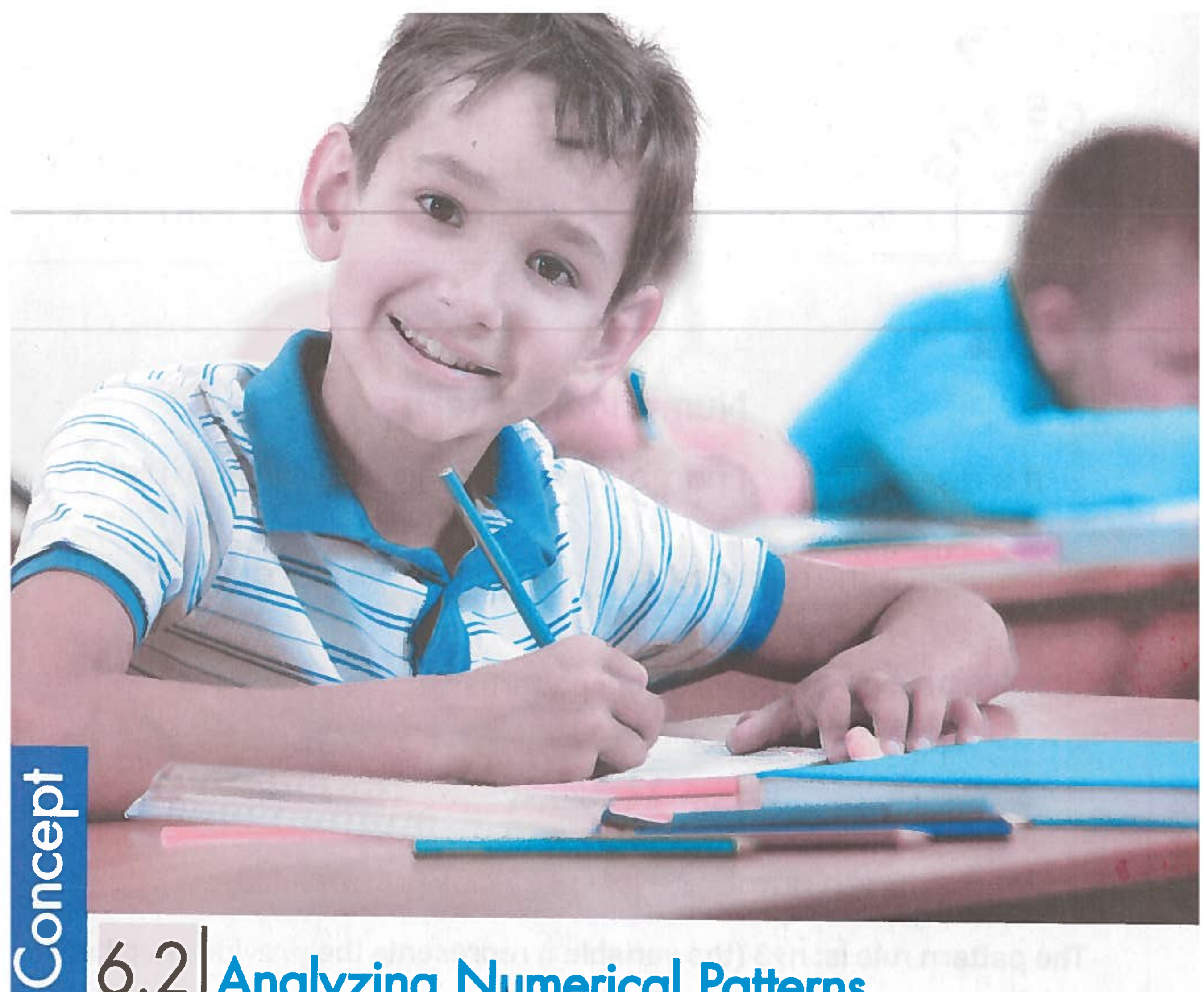
....

....

ⓑ Mounir is lifting weights to help train for an upcoming competition. He attaches 4 weights to his bar, a pair of larger weights and a pair of smaller weights. Each large weight has a mass of 33.75 kilograms and is 17.5 kg heavier than each of the smaller weights. Together the four weights have a mass of 100 kg. What is the mass of one of the smaller weights?

....

....



Concept

6.2 | Analyzing Numerical Patterns

Lessons 5 – 7:

Identifying Numerical Patterns
Extending and Creating Numerical Patterns
Solving Problems with Numerical Patterns

Learning Objectives:

By the end of these lessons, the student will be able to:

- Identify a numerical pattern.
- Explain the rule for a numerical pattern.
- Use letters to represent unknown quantities in a rule for a numerical pattern.
- Extend a numerical pattern.
- Create a numerical pattern.
- Create two numerical patterns using two given rules.
- Solve real-world problems involving numerical patterns.



Identifying Numerical Patterns
Extending and Creating Numerical Patterns
Solving Problems with Numerical Patterns

Learn

Numerical Pattern

It is a sequence of numbers according to a certain rule.

Pattern rule: is the relationship between the number and the number before it.

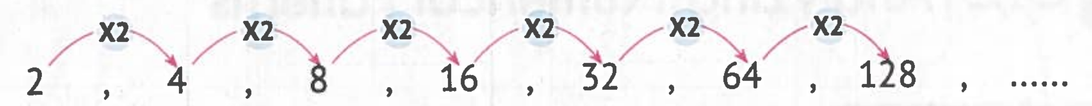
Example: Note the following patterns:

+3 +3 +3 +3 +3 +3

3 , 6 , 9 , 12 , 15 , 18 , 21 , ...

Each number = the previous number + 3

The pattern rule is: n+3 (the variable n represents the previous number)



Each number = the previous number X 2

The pattern rule is: n X 2 (the variable n represents the previous number)

1 **Write the rule for each pattern with a variable. Then, complete the pattern by finding the missing values:**

a) 5 , 10 , 15 , 20 , 25 , 30 , ..., ..., ... Rule : ....

b) 1 , 2 , 4 , 8 , 16 , 32 , ..., ..., ... Rule : ....

c) 45 , 39 , 33 , 27 , 21 , ..., ..., ... Rule : ....

d) 28 , 25 , 22 , 19 , 16 , 13 , ..., ..., ... Rule : ....

Learn

Input/Output Tables

Pattern rule: is the relationship between the input number and the output number.

Note the following patterns:

Input	Output
1	5
2	10
3	15
4	20

Output number = Input number X 5
Rule: n X 5

Input	Output
8	2
16	4
24	6
32	8

Output number = Input number ÷ 4
Rule: n ÷ 4

2 Write the rule for each pattern with a variable. Then, complete the pattern by finding the missing values:

a

Input	Output
8	2
12	3
....	4
....	5
24	....

Rule: ....

b

Input	Output
2	6
3	9
4	....
....	15
....	18

Rule: ....

c

Input	Output
6	1
8	3
10	5
12	....
....	9

Rule: ....

d

Input	Output
6	4
8	6
10	8
....	10
14	....

Rule: ....

Learn

A pattern rule can consist of more than one operation.

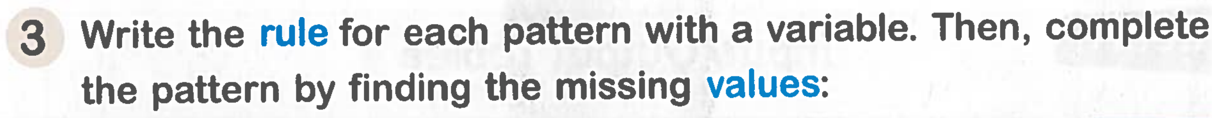
Note the following patterns:

Input	Output
10	6
12	7
14	8
16	9

Rule: n ÷ 2 + 1

Input	Output
31	10
34	11
37	12
40	13

Rule: (n – 1) ÷ 3



3 Write the **rule** for each pattern with a variable. Then, complete the pattern by finding the missing **values**:

ⓐ

Input	Output
2	7
3	10
4	13
5	....
....	19

Rule: ....

ⓑ

Input	Output
1	6
3	16
5	26
....	36
9	....

Rule: ....

ⓒ

Input	Output
10	4
12	5
....	6
16	....
18	....

Rule: ....

ⓓ

Input	Output
2	4
3	9
4	16
5	....
....	36

Rule: ....

4 Using the given information, list the first five numbers in the pattern:

ⓐ Starting number: 1, Rule: n + 3: ...., ..., ..., ..., ...

ⓑ Starting number: 3, Rule: n X 3 – 1.5: ...., ..., ..., ..., ...

ⓒ Starting number: 5.25, Rule: n ÷ 0.5: ...., ..., ..., ..., ...

ⓓ Starting number: 11, Rule: (n + 3) X 10: ...., ..., ..., ..., ...

5 Use a **pattern** to help you solve each problem:

ⓐ When Shams was **6** years old, her brother Tamer was **half** her age.

Complete the table to show Shams' and Tamer's ages.

Shams' Age	Tamer's Age
15	....
17	....
....	16
22	....
....	21

How old will Tamer be when Shams is **12**?

....

ⓑ A seamstress is making dresses She noticed the amount of fabric she used to make **3** dresses and to make **5** dresses. Use the pattern to complete the table.

Number of Dresses	Fabric Needed (m)
1	....
2	....
3	7.5
4	....
5	12.5

How much fabric will the seamstress need to make **7** dresses?

....



سلسلة كتب الاستاذ

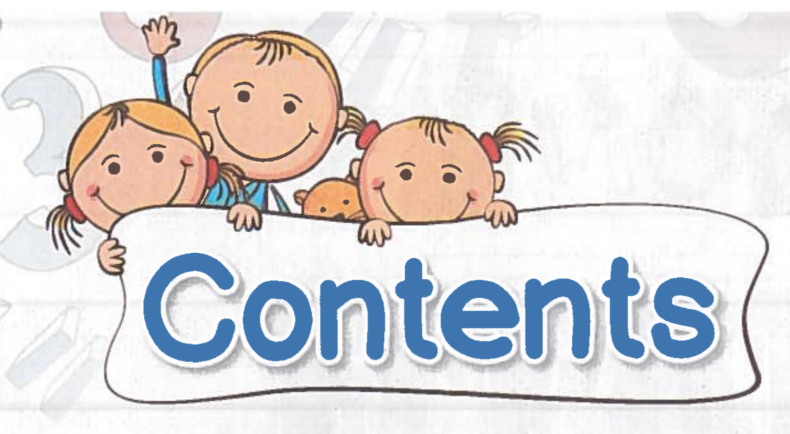


EXERCISE BOOK

5th

PRIMARY

FIRST TERM



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Theme 1

Number Sense and Operations



Units of the Theme

Unit 1 Decimal Place Value and Computation

Concept 1.1: Decimals to the Thousandths Place

Concept 1.2: Adding and Subtracting Decimals

Unit 2 Number Relationships

Concept 2.1: Expressions, Equations, and the Real World

Concept 2.2: Factors and Multiples

Unit 3 Multiplication with Whole Numbers

Concept 3.1: Models for Multiplication

Concept 3.2: Multiplying 4-Digit Numbers by 2-Digit Numbers

Unit 1

Concept

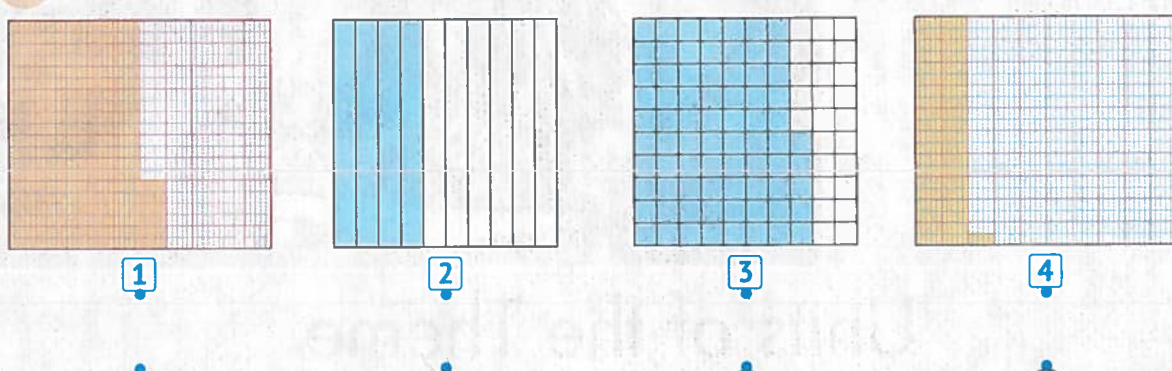
Decimal Place Value and Computation

1.1 Decimals to the Thousandths Place

Exercises on Lessons 1 & 2

The Journey Begins & Decimals to the Thousandths Place

1 **Match each decimal model to the decimal number it represents:**



1 2 3 4

a 0.400 b 0.205 c 0.530 d 0.750

2 **Write each fraction as a decimal:**

1. $\frac{45}{100}$ = ...
2. $\frac{5}{10}$ = ...
3. $\frac{982}{1,000}$ = ...
4. $\frac{57}{1,000}$ = ...
5. $8\frac{3}{100}$ = ...
6. $22\frac{5}{10}$ = ...
7. $9\frac{2}{10}$ = ...
8. $15\frac{239}{1,000}$ = ...

3 **Complete the following:**

1. Three hundred fifty-nine million, forty thousand, six and seventy-nine hundredths **(in standard form):** ....
2. Six milliard, seventy thousand, ninety-six and five thousandths **(in standard form):** ....
3. 45,025,003.36 **(in word form):** ....

....

4 9,200,000,065.027 (**in word form**): ....

....

5 In 457,258,350.68, the digit 6 is in the .... place and its value is

....

6 In 500,725,235.102, the digit in the Hundredths is .... and its value is ....

7 The value of 9 in the Hundredths place is ....

8 If the value of 3 is 0.3, then its place value is ....

9 The greatest decimal number that can be formed from the digits (6, 3, 9, 8, 2, 7) up to the Hundredths is ....

10 The greatest decimal number that can be formed from the digits (8, 3, 2, 0, 8) up to the Tenths is ....

11 The smallest number that can be formed from the digits (3, 9, 0, 5) up to the Thousandths is ....

12 The smallest number that can be formed from the digits (8, 3, 5, 8, 2, 7, 2) up to the Hundredths is ....

13 0.523 = ... thousandths, ... hundredths, ... tenths.

14 .... = 7 tenths, 9 thousandths.

15 .... = 2 hundredths, 4 thousandths.

4 Choose the correct answer:

1 Seven milliard, fifty thousand and seven hundredths = ...

(7,050.07 or 7,000,050.07 or 7,000,050,000.07 or 7,000,050,000,.07)

2 56,000,500.035 (**in word form**): ....

(fifty-six thousand, five hundred and and thirty-five thousandths

or fifty-six million, five hundred and thirty-five thousandths

or fifty-six million, five hundred thousand and thirty-five thousandths

or fifty-six million, five hundred thousand and thirty-five hundredths)

3 The place value of 5 in 528,239.247 is ....

(Hundred Millions or Hundred Thousands or Hundreds or Hundredths)

4 The value of 0 in 247,369.205 is ....

(0.001 or 0.01 or 0.1 or 0)

5 If the value of 7 is 0.7, then its place value is ....

(Tenths or Ones or Tenths or Hundredths)

6 If the place value of 3 is Thousandths, then its value is ....

(0.003 or 0.03 or 0. or 3,000)

7 $4\frac{45}{100}$ = ... (4.45 or 445 or 4.045 or 45.4)

8 2.053 = ... ($2\frac{53}{10}$ or $2\frac{53}{100}$ or $2\frac{53}{1,000}$ or $\frac{253}{1,000}$)

9 The greatest decimal number that can be formed from the digits (9, 2, 2, 3, 7, 9) up to the Hundredth is ....

(9,973.22 or 2,237.99 or 99,732.2 or 22,379.9)

10 The greatest decimal number that can be formed from the digits (6, 8, 9, 4) is .... (9.864 or 98.64 or 986.4 or 9,864)

11 The smallest decimal number that can be formed from the digits (6, 2, 0, 8, 3) up to the Thousandths is ....

(2,036.008 or 86.302 or 2,036.8 or 20.368)

12 The number of Tenths in 0.386 is .... parts. (3 or 30 or 83 or 386)

13 6 hundredths = ... (6 or 0.60 or 0.060 or 0.006)

14 6 tenths, 9 thousandths = ... (0.609 or 0.069 or 6.009 or 0.906)

Assessment on Lessons 1&2

First: Complete the following:

1. Nine milliard, ninety thousand and nine thousandths **(in digits)**: ....
2. 6,200.09 **(in word form)**: ....
3. The place value of **9** in 596,258.27 is ....
4. The greatest **decimal** number formed from the digits (9, 8, 0, 2, 9, 5) up to the Hundredths is ....
5. The value of **0** in 653,852.208 is ....

Second: Choose the correct answer:

1. Four hundred million, thirty thousand and thirty hundredths = ...
   - ⓐ 400,030,000.30 ⓑ 400,030.03 ⓒ 4,030,000.30 ⓓ 430.30
2. 3,000,003.003 **(in word form)**: ....
   - ⓐ Three hundred, three million and three thousandths
   - ⓑ Three million, three and three thousandths
   - ⓒ Three million, three thousand and three thousandths
   - ⓓ Three hundred thousand, three and three thousandths
3. In ...., the place value of 5 is Hundredths.
   - ⓐ 500.46 ⓑ 46.005 ⓒ 40.056 ⓓ 46,500
4. The **smallest** decimal number that can be formed from the digits (5, 2, 3, 7, 2) up to the Thousandth is ....
   - ⓐ 22,357 ⓑ 2,235.7 ⓒ 223.57 ⓓ 22.357
5. The digit that represents the Thousandths in 4,568.178 is ....
   - ⓐ 1 ⓑ 7 ⓒ 8 ⓓ 4

Third: Match:

1. Nine hundred million **and** nine hundred thousandths	ⓐ 900,000.90
2. Nine hundred thousand **and** ninety hundredths	ⓑ 909.009
3. Nine hundred, nine **and** nine thousandths	ⓒ 900,000,000.900
4. Nine hundred million **and** nine thousandths	ⓓ 900,000.09
5. Nine hundred thousand **and** nine hundredths	ⓔ 900,000,000.009

Exercises on Lessons 3 & 4

Place Value Shuffle & Composing and Decomposing Decimals

1 Find the result of each of the following using the place value chart:

1 4.52 X 10 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			

2 456.258 X 10 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			

3 56.28 ÷10 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			

4 253.9 ÷ 10 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			

5 9832 ÷10 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			

2 Complete the following:

1. The value of 9.25 increased when multiplying by 10 to ....
2. The value of .... increased when multiplying by 10 to 8.57.
3. The value of 36.6 .... when multiplying by 10 to 366.
4. The value of 0.25 decreased when dividing by 10 to ....
5. The value of .... increased when dividing by 10 to 24.8.
6. The value of 1.25 .... when dividing by 10 to 0.125.
7. 893 ÷ 10 = ...
8. 6.38 ÷ 10 = ...
9. .... ÷ 10 = 2.7
10. 458.36 X 10 = ...
11. .... X 10 = 25
12. 3,000 + 500 + 0.8 + 0.07 + 0.006 = ...
13. 25 + 0.025 = ...
14. 200 + 30 + 5 + 0.48 = ...
15. 63 + 0.025 = ...
16. 43.043 = 43 + ...
17. 8,258.36 = 8,000 + 200 + 50 + 8 + ...
18. 95.905 = ... (**in expanded form**)
19. 85.36 = ... Tens + ... Ones + ... Tenths + ... Hundredths.

3 Choose the correct answer:

1. The value of .... increased when multiplying by 10 to 25.26.
   (25.26 or 252.6 or 2.526 or 2,526)
2. The value of .... decreased when dividing by 10 to 0.026.
   (0.026 or 0.26 or 2.6 or 26)
3. .... X 10 = 258 (2580 or 258 or 25.8 or 2.58)
4. 45 X 10 = ... (450 or 0.45 or 4.5 or 40.5)
5. 8.05 ÷ 10 = ... (805 or 8.5 or 80.5 or 0.805)
6. When all digits of a number move one place to the left, its value ....
   (decreases or increases or does not change or other)
7. When all digits of a number move one place to the ...., its value decreases.
   (right or left or other)

8 23 + 0.02 + 0.003 = ... (2,302,00 or 2,323 or 23.023 or 23.23)

9 824.12 = ... (824 + 1 + 2 or 824 + 12 or 824 + 0.12 or 800 + 200 + 4 + 10 + 2)

10 When 56.73 is multiplied by 10, the value of the digit 7 ....

(does not change or increases from 0.7 to 7 or increases from 70 to 700 or decreases from 0.7 to 0.07)

4 Match:

1 58.25 X 10
2 58.25 ÷ 10
3 582.5 X 10
4 582.5 ÷ 10

a 58 + 0.25
b 582 + 0.5
c 5 + 0.825
d 5,800 + 25

5 Use the digits (8, 5, 7, 0) and form the smallest decimal number up to the Thousandths, then multiply the result by 10, and complete:

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			

1 The value of .... (increased/decreased) when multiplying by 10 from .... to ....

2 The value of .... (increased/decreased) when multiplying by 10 from .... to ....

3 The value of .... (increased/decreased) when multiplying by 10 from .... to ....

4 Therefore, the value of the whole number .... (increased/decreased) by a factor of 10 from .... to .... , so .... X .... = ...

Assessment on Lessons 3&4

First: Choose the correct answer:

1. The value of **45.26** increases when multiplying by 10 to ....
   - (a) 4,526
   - (b) 4.526
   - (c) 452.6
   - (d) 450.26

2. The value of .... decreases when dividing by 10 to **75.28**.
   - (a) 752.8
   - (b) 7.528
   - (c) 750.28
   - (d) 75.028

3. 400 + 50 + 0.2 + 0.004 = ...
   - (a) 450.24
   - (b) 450.024
   - (c) 450.204
   - (d) 45.204

4. 20.05 = ...
   - (a) 20 + 5
   - (b) 200 + 0.5
   - (c) 2 + 0.005
   - (d) 20 + 0.05

5. 85 ÷ 10 = ...
   - (a) 8.5
   - (b) 0.85
   - (c) 0.085
   - (d) 850

Second: Complete the following:

1. The value of .... increases when multiplying by 10 to 39.27.
2. The value of 270 is decreased when multiplying by 10 to ....
3. 45.012 = 45 + ...
4. 500 + 20 + 3 + 0.8 + 0.07 + 0.006 = ...
5. ....÷ 10 = 45.9

Third: Match:

1. 78 X 10 ....
2. 78 ÷ 10 = ...
3. 70 + 0.8 = ...
4. 7 + 0.08 = ...
5. 70 + 0.08 = ...

- (a) 7.8
- (b) 70.8
- (c) 780
- (d) 70.08
- (e) 7.08

Fourth: Put (✓) or (✗) in front of each statement:

1. The value of any number is increased when it's divided by 10. (   )
2. 85.24 X 10 = 8.524 (   )
3. 2.725 ÷ 10 = 27.25 (   )
4. 50 + 0.005 = 50.05 (   )
5. 200 + 20 + 0.2 + 0.002 = 220.202 (   )

Exercises on Lessons 5 & 6

Comparing Decimals & Rounding Decimals

1 Complete using (<, = or >):

1. 456.25 ( ) 45.625
2. 79.02 ( ) 790.2
3. 42.9 ( ) 42.900
4. 12.500 ( ) 12.050
5. 98.78 ( ) 103.5
6. 90.05 ( ) 900.5
7. 8.5 X 10 ( ) 85 ÷ 10
8. 9.08 X 10 ( ) 9.08 ÷ 10
9. 0.5 X 10 ( ) 50
10. 85.03 ( ) 80 + 5 + 0.03
11. 75 + 0.05 ( ) 75.50
12. 107.05 ( ) One hundred, seventy-five hundredths
13. 800,008.3 ( ) Eight hundred, eight thousand and three tenths
14. 700,050,005.50 ( ) Seven hundred million, fifty thousand, five and fifty hundredths
15. 400 + 4 + 0.4 + 0.004 ( ) Four hundred four, four hundred and forty thousandths

2 Circle the greatest number:

1. 27.03 , 270.3 , 2.703
2. 56.38 , 56.038 , 560.38
3. 180.06 , 18.006 , 180.60
4. 900.900 , 900.090 , 900.009

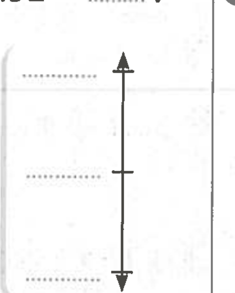
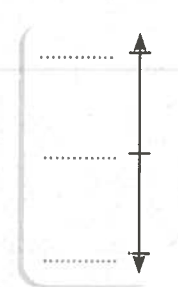
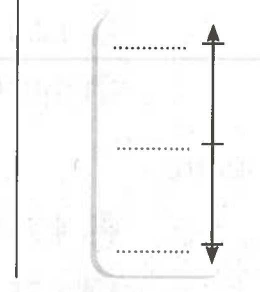
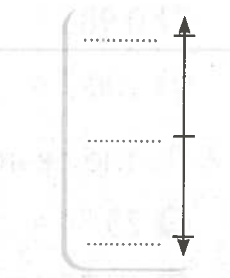
3 Circle the smallest number:

1. 100.50 , 105.05 , 150.05
2. 900.25 , 90.025 , 902.05
3. 1,000.02 , 100,200 , 100.002
4. 8.237 , 80.237 , 802.037

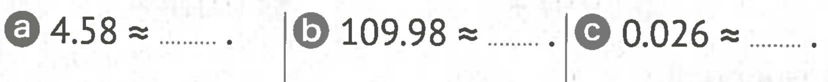
4 Round each of the following using the midpoint strategy:

1 To the nearest whole number:

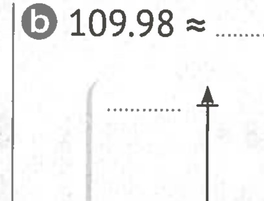
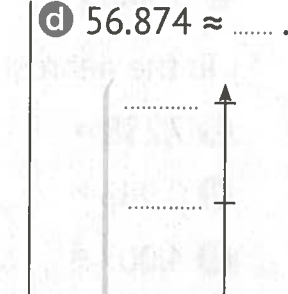
ⓐ 5.32 ≈ .... ⓑ 69.47 ≈ .... ⓒ 0.689 ≈ .... ⓓ 99.87 ≈ ....

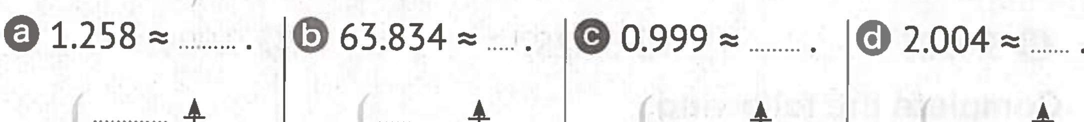
2 To the nearest Tenth:



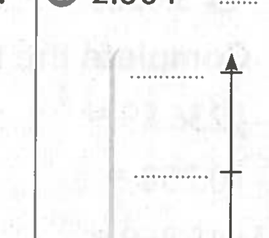
ⓐ 4.58 ≈ .... ⓑ 109.98 ≈ .... ⓒ 0.026 ≈ .... ⓓ 56.874 ≈ ....

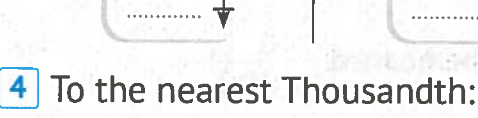



3 To the nearest Hundredth:

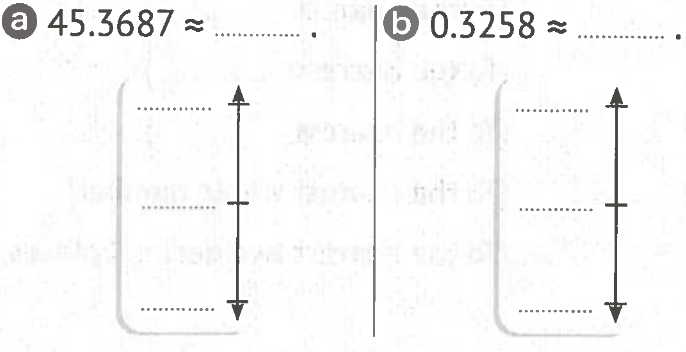
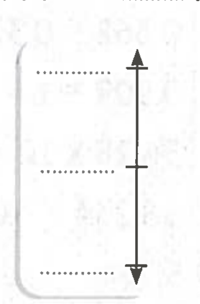
ⓐ 1.258 ≈ .... ⓑ 63.834 ≈ .... ⓒ 0.999 ≈ .... ⓓ 2.004 ≈ ....





4 To the nearest Thousandth:

ⓐ 45.3687 ≈ .... ⓑ 0.3258 ≈ .... ⓒ 0.9999 ≈ ....

5 Round each of the following numbers using the rounding rule strategy:

1 To the nearest whole number:

a 5.28 ≈ .... b 9.38 ≈ .... c 0.368 ≈ ....

d 0.983 ≈ .... e 12.5 ≈ .... f 69.58 ≈ ....

g 100.7 ≈ .... h 999.9 ≈ .... i 53.248 ≈ ....

2 To the nearest Tenth:

a 23.54 ≈ .... b 4.258 ≈ .... c 0.97 ≈ ....

d 18.329 ≈ .... e 1.25 ≈ .... f 3.678 ≈ ....

g 200.03 ≈ .... h 59.97 ≈ .... i 0.024 ≈ ....

3 To the nearest Hundredth:

a 7.258 ≈ .... b 69.358 ≈ .... c 0.293 ≈ ....

d 0.983 ≈ .... e 0.125 ≈ .... f 75.075 ≈ ....

g 4.007 ≈ .... h 9.995 ≈ .... i 20.002 ≈ ....

4 To the nearest Thousandth:

a 25.3697 ≈ .... b 2,258.3645 ≈ .... c 100.0027 ≈ ....

d 3.0223 ≈ .... e 0.0257 ≈ .... f 9.9999 ≈ ....

6 Complete the following:

1. 236.89 ≈ .... (To the nearest One)
2. 0.258 ≈ .... (To the nearest one decimal place)
3. 45.269 ≈ .... (To the nearest 0.01)
4. 5.2423 ≈ .... (To the nearest $\frac{1}{1,000}$)
5. 56.289 ≈ 56.3 (To the nearest ....)
6. 0.368 ≈ 0.37 (To the nearest ....)
7. 0.909 ≈ 1 (To the nearest ....)
8. 56.28 X 10 = ... ≈ .... (To the nearest whole number)
9. 56.234 ÷ 10 = ... ≈ .... (To the nearest two decimal places)
10. 5.7 < .... < 5.8

7 Choose the correct answer :

1. 56.73 < .... (56.69 or 56.8 or 56.075 or 56.729)
2. 98.25 > .... (100.05 or 98.52 or 98.263 or 98.205)
3. 56.5 X 10 ⬭ 565 ÷ 10 (< or = or > or ⩽)
4. 0.32 X 10 ⬭ 3.2 ÷ 10 (< or = or > or ⩽)
5. 56 < .... < 57 (562 or 57.3 or 5.6 or 56.02)
6. .... ≈ 2.5 (To the nearest 0.1)
   (2.445 or 2.456 or 0.536 or 2.05)
7. .... ≈ 69 **(To the nearest whole number)**
   (69.5 or 68.4 or 68.369 or 69.45)
8. 56.298 ≈ 56.30 **(To the nearest** ....)
   (100 or 10 or 0.01 or whole number)
9. 63.245 ≈ 60 **(To the nearest** ....)
   (0.01 or 0.1 or 10 or whole number)
10. 56 + 0.02 + 0.007 ≈ .... **(To the nearest two decimal places)**
    (56.2 or 56.3 or 56.02 or 56.03)

8 Arrange the following numbers:

1. 56.25 , 56.52 , 56.025 , 56.502 , 56.052 **(Ascendingly)**

   .... < .... < .... < .... < ....

2. 6.005 , 5.006 , 50.06 , 60.05 , 5.060 **(Descendingly)**

   .... > .... > .... > .... > ....

Assessment on Lessons 5&6

First: **Choose the correct answer:**

1. 45 + 0.5 ⬭ 450 + 0.05
   - (a) <
   - (b) >
   - (c) =
   - (d) ≤
2. .... ≈ 75.3 (To the nearest Tenth)
   - (a) 75.03
   - (b) 75.39
   - (c) 750.3
   - (d) 75.34
3. 78.098 ≈ .... (To the nearest whole number)
   - (a) 78.1
   - (b) 78
   - (c) 79
   - (d) 7
4. 68.567 ≈ 68.57 (To the nearest ....)
   - (a) whole number
   - (b) Tenth
   - (c) Hundredth
   - (d) Thousandth
5. .... ≈ 20.02 (To the nearest Hundredth)
   - (a) 20.002
   - (b) 20.024
   - (c) 0.025
   - (d) 20.200

Second: **Round the following numbers:**

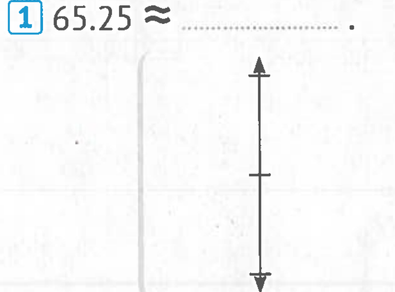
1. 458.025 ≈ .... (To the nearest Hundredth)
2. 458.025 ≈ .... (To the nearest Tenth)
3. 458.025 ≈ .... (To the nearest whole number)
4. 458.025 ≈ .... (To the nearest Ten)
5. 458.025 ≈ .... (To the nearest Hundred)

Third: **Compare using (<, = or >):**

1. 40.02 ⬭ 400 + 2
2. 50.600 ⬭ 5.006
3. 500 + 90 + 3 + 0.8 + 0.07 ⬭ 593.87
4. 300.03 ⬭ Three hundred and three tenths
5. 25 + 0.03 + 0.008 ⬭ Twenty-five and eighty-three hundredths

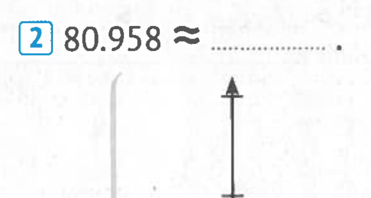
Fourth: **Label the midpoint of the number line. Place the given decimal number at its proper location, and then round:**

1. 65.25 ≈ ....



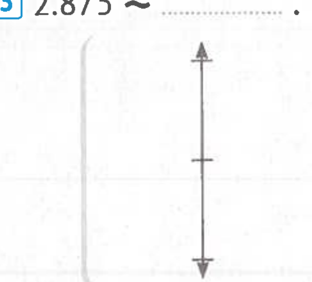
To the nearest whole number.

2. 80.958 ≈ ....



To the nearest Tenth.

3. 2.875 ≈ ....



To the nearest Hundredth.

Assessment On Concept 1

First: Complete the following:

1. Five milliard, five million, five hundred thousand and five thousandths = ... **(In digits)**
2. The smallest decimal number that can be formed from the digits (9 , 8 , 0 , 5 , 7) up to the Hundredths is ....
3. In 8,567.491, the place value of 9 is hundredths and its value is ....
4. The value of 586.47 is increased when multiplying by 10 to ....
5. 458.025 ≈ .... **(To the nearest Tenth)**

Second: Choose the correct answer:

1. The greatest decimal number that can be formed from the digits (8 , 5 , 9 , 0 , 7) is ....
   ⓐ 89,750 ⓑ 9,870.5 ⓒ 50,789 ⓓ 5,078.9
2. The value of .... is decreased when dividing by 10 to 75.2.
   ⓐ 7,520 ⓑ 7.52 ⓒ 752 ⓓ 75.200
3. 4,000 + 40 + 0.4 + 0.04 = ...
   ⓐ 4,040.44 ⓑ 44.44 ⓒ 444.04 ⓓ 4,400.40
4. .... ≈ 75.60 **(To the nearest Hundredth)**
   ⓐ 75.694 ⓑ 75.607 ⓒ 75.599 ⓓ 75.697

Third: Compare using (<, = or >):

1. 247.089 ◯ 247.100
2. 45.25 ◯ 45 + 25
3. 202.25 ◯ 20.225
4. 20.05 ◯ 20 + 0.05
5. 1,000 + 50 + 0.2 + 0.008 ◯ 1,500.280

Fourth: Match:

1. Three thousand and three thousandths = ...
2. 150 thousandths = ...
3. 400 + 20 + 0.1 + 0.008 = ...
4. 45.95 X 10 = ...
5. 19.999 ≈ .... **(To the nearest Hundredth)**

ⓐ 0.15
ⓑ 3,000.003
ⓒ 20
ⓓ 420.108
ⓔ 459.5

Fifth: Answer the following:

Mazen is planning a trip from Cairo to El Fayoum. He will travel **147.72** kilometers. Round the distance to the nearest whole number. ....

Concept

1.2 Adding and Subtracting Decimals

Exercises on Lessons 7 - 9

Estimating Decimal Sums, Modeling Decimal Addition & Thinking Like a Mathematician

1 Estimate the sum of each of the following:

1 Using rounding to the nearest Tenth strategy:

a 56.35 + 25.04 .... + ... = ...	b 6.358 + 15.25 .... + ... = ...	c 96.35 + 69.5 .... + ... = ...
d 8.25 + 0.999 .... + ... = ...	e 63.25 +7.76 .... + ... = ...	f 96.35 + 69.5 .... + ... = ...

2 Using benchmark decimals strategy:

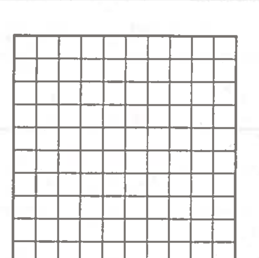
a 0.92 + 0.56 .... + ... = ...	b 25.96 + 3.4 .... + ... = ...	c 6.9 + 3.02 .... + ... = ...
d 0.79 + 2.03 .... + ... = ...	e 4.7 + 9.05 .... + ... = ...	f 6.01 + 4.53 .... + ... = ...

3 Using Front-End Estimation strategy:

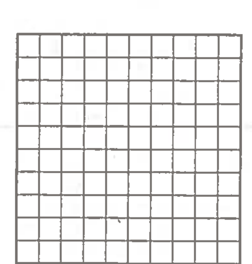
a 45.36 + 36.15 .... + ... = ...	b 6.37 + 4.25 .... + ... = ...	c 563.24 + 556.47 .... + ... = ...
d 0.35 + 1.25 .... + ... = ...	e 3.656 + 0.963 .... + ... = ...	f 45 + 49.53 .... + ... = ...

2 Add using the decimal model:

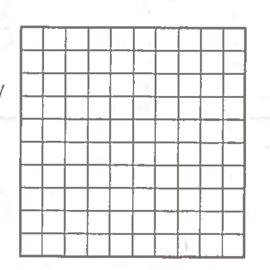
1 0.12 + 0.56 = ...



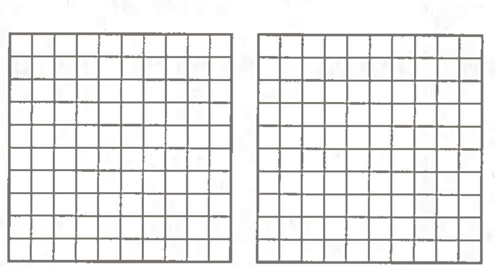
2 0.4 + 0.24 = ...



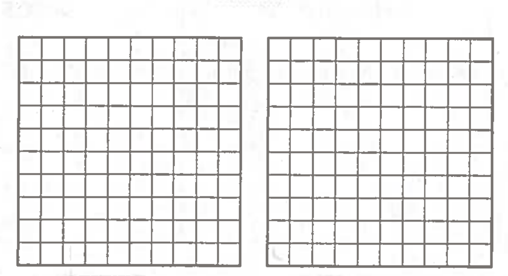
3 0.15 + 0.45 = ...



4 0.75 + 0.68 = ...



5 0.85 + 0.78 = ...



3 Add using the place value table:

1 456.25 + 23.028 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			

2 69,586.35 + 892 .9 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			

3 32.56 + 1,856.996 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			

4 69,586.35 + 892 .9 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			

5 69,245.7 + 36.578 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			

4 Find the result:

1
```
   56.458
+   7.58
---------
 ........
```

2
```
  483.258
+ 736.27
---------
 ........
```

3
```
   82.025
+ 129.975
---------
 ........
```

4
```
    0.369
+  12.57
---------
 ........
```

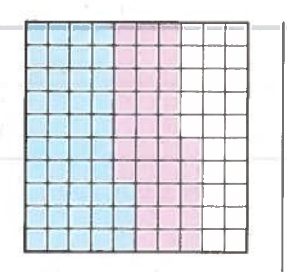
5 56.367 + 56,246.34 = ...

6 56.31 + 8,000.249 = ...

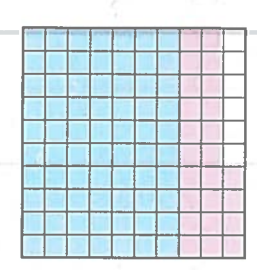
7 39.56 + 245.36 = ...

8 638.47 + 56,324.98 = ...

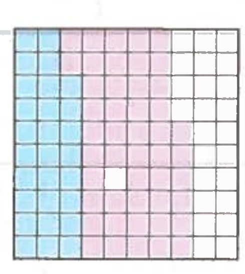
5 Write an expression to match the following models, and write an addition problem, then find the result:



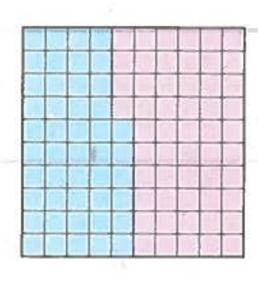
1 .... + ... = ...



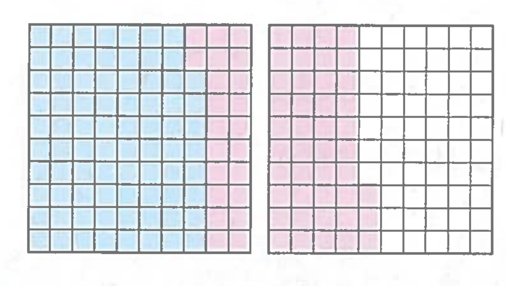
2 .... + ... = ...



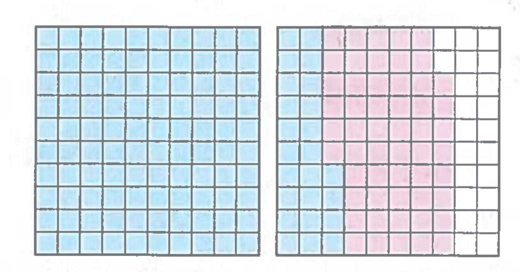
3 .... + ... = ...



4 .... + ... = ...



5 .... + ... = ...



6 .... + ... = ...

6 Complete the following:

1 7 Thousandths + 8 Thousandths = ... Thousandths.

Place value: .... Hundredths, ... Thousandths.

2 45 Thousandths + 15 Thousandths = ... Thousandths.

Place value: .... Hundredths, ... Thousandths.

3 456 Thousandths + 265 Thousandths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

4 5 Hundredths + 68 Thousandths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

5 15 Hundredths + 28 Hundredths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

6 3 Tenths + 28 Thousandths = ... Thousandths.

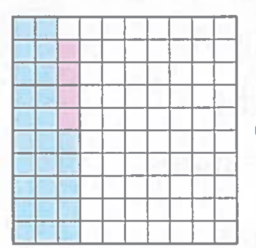
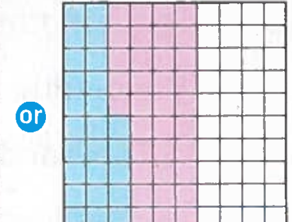
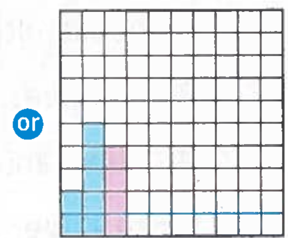
Place value: .... Tenths, ... Hundredths, ... Thousandths.

7 Complete the following:

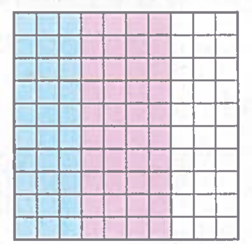
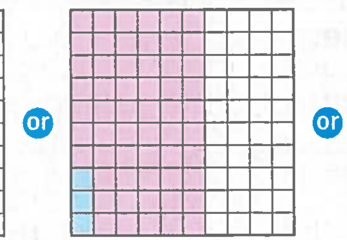
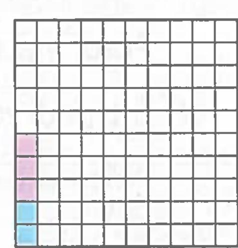
1. The benchmark decimal closest to 0.99 is ....
2. The benchmark decimal closest to 0.001 is ....
3. The benchmark decimal closest to 1.57 is ....
4. The estimate of the sum of 56.36 + 57.63 using rounding to the nearest 0.1 strategy is ....
5. The estimate of the sum of 7.59 + 3.89 using **Front-End Estimation strategy** is ....
6. 15 Hundredths + 37 Hundredths = ... Hundredths.
7. 5 Tenths + ... Hundredths = 560 Thousandths.
8. 45.36 + ... = 57.79
9. 0.45 + ... = 1
10. 0.2 + 0.5 + ... = 2

8 Choose the correct answer:

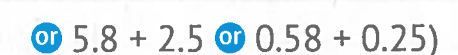
1. The model representing the addition problem 0.25 + 0.4 is ....

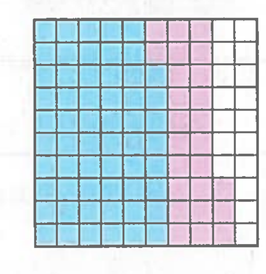
 or  or 

2. The model representing the addition problem 0.3 + 0.4 is ....

 or  or 

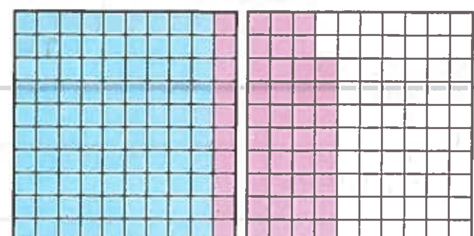
3. The addition problem that represents the opposite model is .... (0.58 + 2.5 or 5.8 + 0.25


or 5.8 + 2.5 or 0.58 + 0.25)



4 The addition problem that represents the corresponding model is

....



(0.09 + 0.48 or 0.9 + 0.48 or 90 + 48 or 0.9 + 4.8)

5 The benchmark decimal closest to 0.45 is .... (0 or 0.5 or 1 or 1.5)

6 The benchmark decimal closest to 2.01 is .... (1 or 1.5 or 2 or 2.5)

7 The estimate of the sum of 3.752 + 2.358 using rounding to the nearest 0.01 strategy is .... (5 or 6.1 or 6.2 or 6.11)

8 4 Tenths + 3 Thousandths = ... Thousandths. (0.403 or 7 or 43 or 403)

9 0.7 + 1.2 + ... = 2 (1.9 or 1.1 or 0.1 or 0.3)

10 0.256 + ... = 1 (0.854 or 1.744 or 0.8 or 0.744)

9 Answer the following:

1 Malak wants to cycle **40** km in a week. By Thursday, Malak had covered **34.99** km, and on Friday she had covered **4.01** km.

Did Malak achieve her goal or not? (Show your answer)

....

....

2 A merchant bought **953.543** kilograms of fruit. The next day, he bought **240,615** kilograms. Estimate the total amount bought by the merchant in the two days. Use the strategy of rounding to the nearest 0.1.

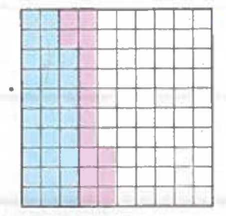
....

3 Fayrouz has **5** meters of fabric. If she needs **3.75** meters to make a dress, and **1.23** meters to make pants, estimate the length of the fabric that Fayrouz needs. Use the strategy of rounding to the nearest whole number. Is the fabric that she has enough or not?

....

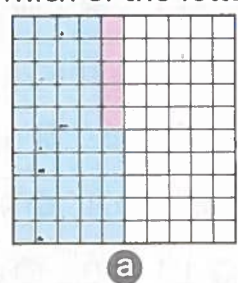
Assessment on Lessons 7-9

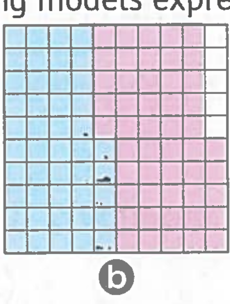
First: Choose the correct answer:

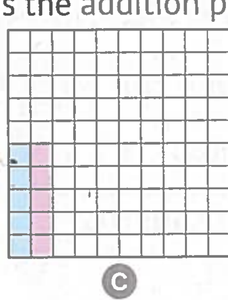


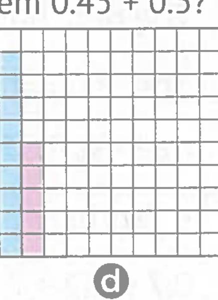
1. The expression that expresses the corresponding model is ....
   - a) 0.28 + 0.15
   - b) 2.8 + 1.5
   - c) 2.8 + 0.15
   - d) 0.28 + 1.5

2. Which of the following models expresses the addition problem 0.45 + 0.5?


a


b


c


d

3. 5.25 + 32.7 = ...
   - a) 37.92
   - b) 8.52
   - c) 85.2
   - d) 37.95

4. 0.75 + ... = 1
   - a) 1.25
   - b) 0.25
   - c) 0.35
   - d) 1.75

5. 65.5 + 5 = ...
   - a) 66
   - b) 70.5
   - c) 65.55
   - d) 655.5

Second: Complete the following:

1. The estimated sum of 4.6 + 5.3 using rounding to the nearest whole number strategy is ....
2. The estimated sum of 6.12 + 3.28 using rounding to the nearest Tenth strategy is ....
3. 4 Hundredths + 27 Thousandths = ... Thousandths.
4. 452.8 + 2.782 = ...
5. .... + 0.62 = 1

Third: Match:

1. 3.5 + 2.5	a) 0.6
2. 0.35 + 0.25 = ...	b) 2.85
3. 0.35 + 2.5 = ...	c) 6
4. 3.5 + 0.25 = ...	d) 60
5. 35 + 25 = ...	e) 3.75

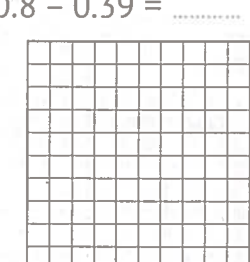
Exercises on Lessons 10-13

Subtracting Decimals, Estimating Decimal Differences, Subtracting to the Thousandths Place & Decimal Story Problems

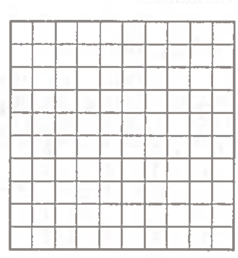
1 Subtract using the decimal model:

1. 0.45 – 0.27 = ...

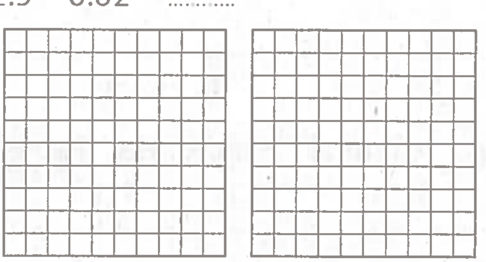
2. 0.8 – 0.39 = ...



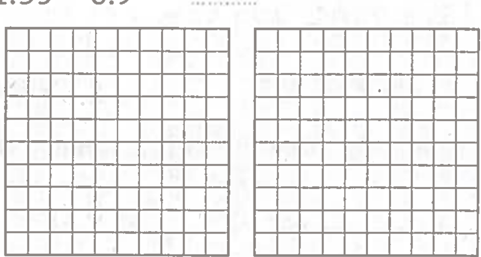
3. 0.78 – 0.5 = ...



4. 1.5 – 0.82 = ...



5. 1.35 – 0.9 = ...



2 Subtract using the place value table:

1. 563.45 – 158.23 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

2. 700.25 – 56.258 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

3 45.369 – 9.98 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

4 56.023 – 9.88 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

5 1,250 – 889.56 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

6 56,025.35 – 9,258.9 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

3 Find the result:

1
```
   70.4
 –  9.59
 ________
 ..........
```

2
```
   523.147
 –  92.57
 ________
 ..........
```

3
```
   802.1
 – 157.637
 ________
 ..........
```

4
```
   5.105
 – 0.89
 ________
 ..........
```

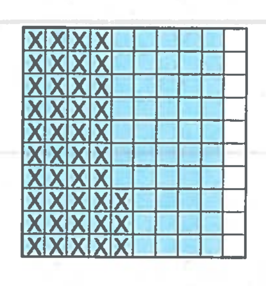
5 900.25 – 56 = ...

6 87.025 – 15.98 = ...

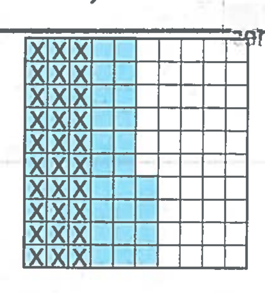
7 39.56 _ 245.36 = ...

8 21,000 – 23.45 = ...

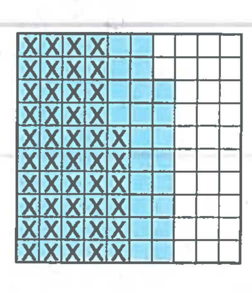
4 Write an expression to match the following models, and write the subtraction problem, then find the result:



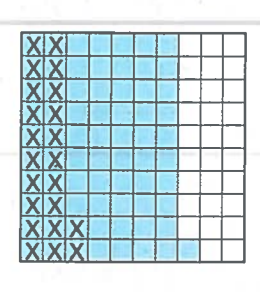
1 .... – .... = ...



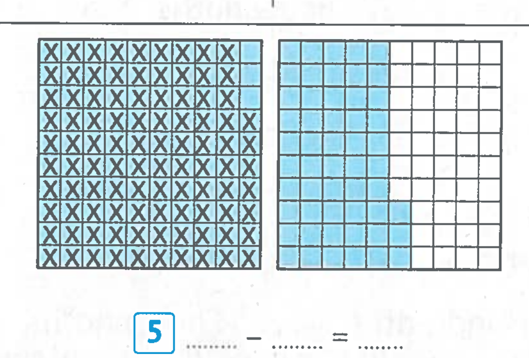
2 .... – .... = ...



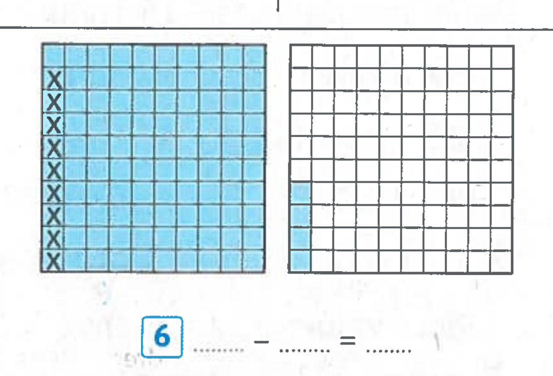
3 .... – .... = ...



4 .... – .... = ...



5 .... – .... = ...



6 .... – .... = ...

5 Estimate the difference of each of the following:

1 Using rounding to the nearest Tenth strategy:

a 75.02 – 27.18 .... – .... = ...	b 9.235 – 5.2 .... – .... = ...	c 25,152.24 – 105.45 .... – .... = ...
d 45.258 – 7.39 .... – .... = ...	e 56.321 – 9.8 .... – .... = ...	f 765.3 – 7.589 .... – .... = ...

2 Using benchmark decimals strategy:

a 0.99 – 0.51 .... – .... = ...	b 25.01 – 3.45 .... – .... = ...	c 8.9 – 2.001 .... – .... = ...
d 1.98 – 0.53 .... – .... = ...	e 7.01 – 0.65 .... – .... = ...	f 15.01 – 7.96 .... – .... = ...

3 Using Front-End Estimation strategy:

a 315.36 – 89.65 .... – .... = ...	b 28.39 – 15.25 .... – .... = ...	c 783.24 – 257.49 .... – .... = ...
d 5.49 – 2.04 .... – .... = ...	e 2.562 – 0.983 .... – .... = ...	f 15 – 12.55 .... – .... = ...

6 Complete the following:

1 79 Thousandths – 15 Thousandths = ... Thousandths.

Place value: .... Hundredths, ... Thousandths.

2 82 Thousandths – 47 Thousandths = ... Thousandths.

Place value: .... Hundredths, ... Thousandths.

3 620 Thousandths – 174 Thousandths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

4 14 Hundredths – 37 Thousandths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

5 63 Hundredths – 18 Hundredths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

6 5 Tenths – 24 Thousandths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

7 Complete the following:

1 The estimate of 56.36 – 14.63 using rounding to the nearest whole number strategy is ....

2 The estimate of 126.276 – 34.98 using rounding to the nearest $\frac{1}{100}$ strategy is ....

3 The estimate of 10.893 – 9.75 using rounding to the nearest 0.1 strategy is ....

4 The estimate of 9.99 – 7.58 using the benchmark decimal strategy is ....

5 The estimate of the sum of 75.23 – 9.25 using **Front-End Estimation** strategy is ....

6 75 Hundredths – 9 Hundredths = ... Hundredths.

7 7 Tenths – .... Hundredths = 650 Thousandths.

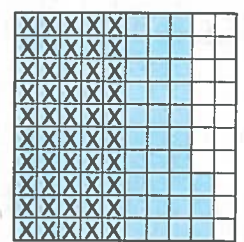
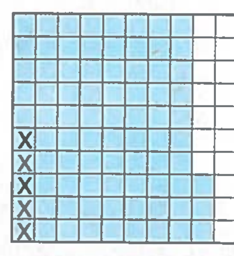
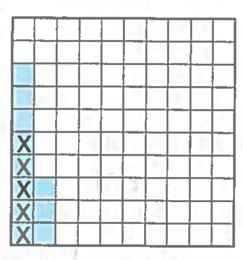
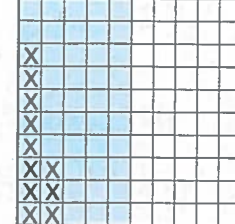
8 963.16 – .... = 56.35

9 1 – .... = 0.45

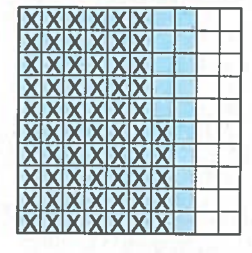
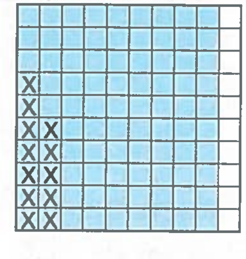
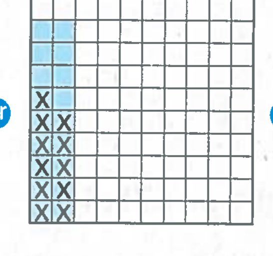
10 .... – 12.5 = 35.73

8 Choose the correct answer:

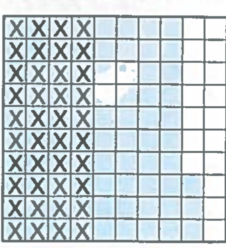
1 The model representing the subtraction problem 0.83 – 0.5 is ....

 or  or  or 

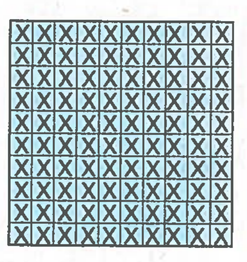
2 The model representing the subtraction problem 0.8 – 0.65 is ....

 or  or  or

3 The subtraction problem that represents the opposite model is .... (0.83 – 0.4 or 8.3 – 0.4 or 83 – 40 or 0.83 – 0.04)



4 The subtraction problem that represents the opposite model is .... (1.72 – 0.17 or 1.72 – 1.7 or 1.72 – 1.17 or 172 - 117)



5 The estimate of 78.089 – 5.247 using rounding to the nearest 0.01 strategy is .... (72.84 or 72.842 or 72.9 or 65)

6 The estimate of 25.368 – 5.247 using rounding to the nearest 0.1 strategy is .... (20 or 20.2 or 20.12 or 25.121)

7 The estimate of 86.25 – 14.89 using rounding to the nearest whole number strategy is .... (71.36 or 71.4 or 71 or 70)

8 3 Tenths – 15 Thousandths = ... Thousandths. (2.85 or 285 or 0.15 or 0.285)

9 12.78 – .... = 8.8 (3.98 or 21.58 or 11.9 or 13.66)

10 1 – .... = 0.214 (786 or 0.786 or 1.214 or 0.213)

9 Answer the following:

1 Mohamed had **15,000** pounds. He bought a refrigerator for **7,520.25** pounds, and a washing machine for **5,640.5** pounds. How many pounds does Mohamed have left?

....

....

2 A road length of **675.5** km, of which the train traveled a distance of **239.47** km. What is the remaining distance from the road?

....

....

3 Tamer drinks **1.5** liters of water per day. If he drinks **0.5** liters in the morning and **0.7** liters at lunch, how many liters of water does he drink in the evening?

....

....

Assessment on Lessons 10-13

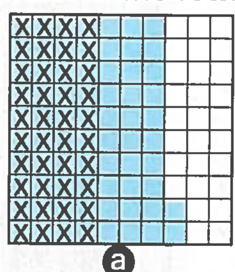
First: Choose the correct answer:

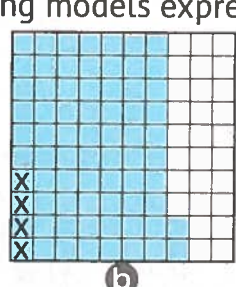
1 The expression that expresses the corresponding model is ....

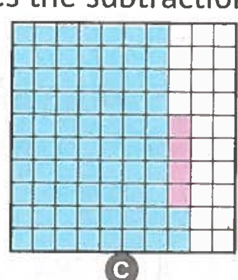
(a) 0.42 – 0.27 (b) 4.2 – 2.7

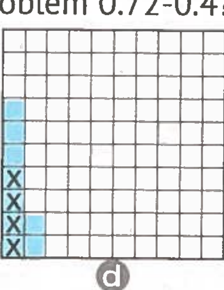
(c) 4.2 – 0.27 (d) 0.42 – 2.7

2 Which of the following models expresses the subtraction problem 0.72-0.4?


(a)


(b)


(c)


(d)

3 7.15 – 2.6 = ...

(a) 4.55 (b) 9.75 (c) 6.09 (d) 7.41

4 1 – .... = 0.47

(a) 1.47 (b) 1.53 (c) 0.53 (d) 0.47

5 8 – 0.45 = ...

(a) 8.45 (b) 8.55 (c) 7.45 (d) 7.55

Second: Complete the following:

1 The estimated difference of 4.2 – 1.8 using rounding to the nearest whole number strategy is ....

2 The estimated difference of 18.46 – 7.25 using rounding to the nearest Tenth strategy is ....

3 5 Hundredths + 35 Thousandths = ... Thousandths.

4 32.7 + 2.079 = ...

5 .... – 0.47 = 0.53.

Third: Match:

1 15.2 – 5.2 2 1.52 – 0.52 3 15.2 – 0.52 4 152 – 5.2 5 152 – 52

(a) 1 (b) 10 (c) 100 (d) 14.68 (e) 146.8

Fourth:

Emad caught three fish whose lengths were 29.28 cm, 29.255 cm, and 35.17 cm. What is their total length? What is the difference between the longest fish and the shortest fish? ....

....

Assessment on Concept 2

First: **Complete the following:**

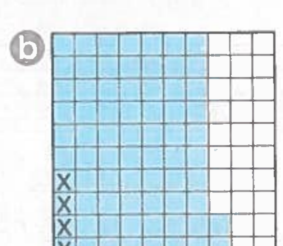
1. The estimated difference of 6.527 – 0.293 using rounding to the nearest Tenth strategy is ....
2. 7 Hundredths + 24 Thousandths = ... Thousandths.
3. 45.25 + ... = 90.5
4. 59.126 – 42.35 = ...
5. 5 Tenths – 5 Thousandths = ... Thousandths.

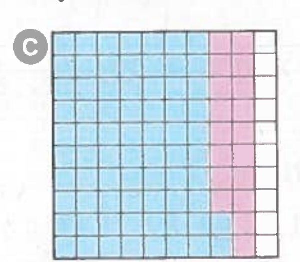
Second: **Choose the correct answer:**

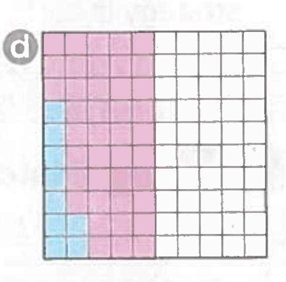
1. The expression that expresses the corresponding model is ....
   - (a) 0.5 – 0.27
   - (b) 0.5 – 2.7
   - (c) 0.5 + 0.27
   - (d) 0.5 + 27
2. The expression that expresses the corresponding model is ....
   - (a) 22 + 30
   - (b) 0.22 – 0.03
   - (c) 2.2 + 3.0
   - (d) 0.22 + 0.30
3. .... – 2.45 = 0.55
   - (a) 3
   - (b) 30
   - (c) 300
   - (d) 0.10
4. 5.456 – 3.456 = ...
   - (a) 8.912
   - (b) 200
   - (c) 20
   - (d) 2
5. 3 Tenths – 33 Thousandths = ... Thousandths.
   - (a) 0.267
   - (b) 267
   - (c) 2.67
   - (d) 26.7

Third: **Match each model to its expression:**

(a) 

(b) 

(c) 

(d) 

1. 0.72 – 0.04
2. 0.42 – 0.32
3. 0.09 + 0.41
4. 0.72 + 0.18

Fourth: **Answer the following:**

Emad had **56.5** pounds. He bought a pen for **12.25** pounds and a notebook for **15.5** pounds. How much money does Emad have left?

....

....

Unit 2 Concept

Number Relationships

2.1 | Expressions, Equations and the Real World

Exercises on Lesson 1

Expressions, Equations, and Variables

1 Choose the correct answer:

1. $45 + y - 2.5$ is a/an ....
   (variable or mathematical expression or equation or other)
2. $25 + 5.7 \times 2$ is a/an ....
   (variable or mathematical expression or equation or other)
3. "Ahmed sleeps 7 hours a day." is a/an ....
   (variable or mathematical expression or equation or other)
4. $12 + 3.7 = y$ is a/an ....
   (variable or mathematical expression or equation or other)
5. $8 + x - 7 = 6.7$ is a/an ....
   (variable or mathematical expression or equation or other)
6. "The largest 3-digit number is 999." is a/an ....
   (variable or mathematical expression or equation or other)
7. "Walaa has 1.25 kg of pistachios." is a/an ....
   (variable or mathematical expression or equation or other)
8. The equation that represents "12.5 plus a number equals 15." is ....
   ($15 - x = 12.5$ or $15 + x = 12.5$ or $12.5 + x = 15$ or $12.5 + 15 = x$)

9 The equation that represents "a minus 12 equals 7.5." is ....

($a - 12 = 7.5$ or $12 - a = 7.5$ or $7.5 - a = 12$ or $12 - 7.5 = a$)

10 In the equation $45 - m = 25$, if 45 represents the number of students in one of the classes and 25 represents the number of girls in this class, then the variable **m** represents the ....

(number of girls or number of boys or number of students or number of teachers)

11 In the equation $75 - 56.3 = y$, if 75 represents the money that Yassin owns, and 56.3 represents the money he spent, then the variable **y** represents ....

(the money with him now or the money he spent or the money he got, or the money that was with him first)

12 Adel is comparing the height of two plants in the garden using this equation: $92.5 - n = 45.5$, where 92.5 is the height of one of them, then the variable **n** in this equation represents ....

(the difference between the height of the two plants, or the sum of the height of the two plants, or the height of one of the plants or Adel's height)

13 The equation $36.5 + 2.15 = m$ is similar to the equation ....

($36.5 = y + 2.15$ or $y + 36.5 = 2.15$ or $36.5 - y = 2.15$ or $2.15 + 36.5 = y$)

14 If the dimensions of a rectangle are 5.5 cm and 7.2 cm, then the variable "**p**" in the equation $7.2 + 5.5 + 7.2 + 5.5 = p$ represents the ....

(length or width or perimeter or area)

15 Huda bought a pen for 12.5 pounds and a ruler for 3.25 pounds. The equation that represents what Huda paid is ....

($3.25 + b = 12.5$ or $12.5 + b = 3.25$ or $12.5 - b = 3.25$ or $12.5 + 3.25 = b$)

2 Read the following story problems. Make an equation for each problem:

1. Hazem has **125** pounds. He bought books for **65.5** pounds.
   What is the remaining money with Hazem?

   ....

   ....

2. A classroom in a school has **21** girls and **15** boys.
   How many students are there in this class?

   ....

   ....

3. A cattle farm has **90** cows and **75** buffaloes. What is the difference between the number of cows and buffaloes?

   ....

   ....

4. Mazen is **145** cm tall and his brother Fouad is **20** cm taller than him.
   How tall is Fouad?

   ....

   ....

5. Two numbers whose sum is **255** and one of them is **107.5**. What is the other number?

   ....

   ....

3 Match:

1. The difference between **5.5** and **3.7**
2. The sum of **5.5** and **3.7**
3. **3.7** plus a number equals **5.5**
4. **5.5** minus a number equals **3.7**
5. A number minus **3.5** equals **3.7**

a. $3.7 + 5.5 = y$
b. $3.7 + a = 5.5$
c. $m - 3.5 = 3.7$
d. $5.5 - 3.7 = x$
e. $5.5 - n = 3.7$

Assessment on Lesson 1

First: **Choose the correct answer:**

1. $5 + x + 3$ is ……………………… .
   (a) a variable (b) a mathematical expression (c) an equation (d) other
2. $7 + 5 = m + 3$ is ……………………… .
   (a) a variable (b) a mathematical expression (c) an equation (d) other
3. In the equation $45 + x = 86$, if **86** represents the number of students in one of the classes and **45** represents the number of boys in this class, **x** represents ……………………… .
   (a) the number of girls (b) the number of boys
   (c) the number of students (d) the number of teachers
4. Hussam compared the lengths of two of his colleagues and wrote this equation: $1.52 - 1.25 = y$, the letter **y** represents ……………………… .
   (a) the height of one of his colleagues
   (b) the sum of the height of his colleagues
   (c) the difference between the heights of his colleagues
   (d) the height of Hussam
5. The equation that represents the difference between **4.25** and **3.79** is ……… .
   (a) $m = 3.79 + 4.25$ (b) $m - 3.79 = 4.25$ (c) $m - 4.25 = 3.79$ (d) $m = 4.25 - 3.79$

Second: **Put (✓) for the correct statement and (✗) for the wrong statement:**

1. "$x + 5 = 7.8$" is called a mathematical expression. (   )
2. "$4 + 5 = 12 - 3$" is called an equation. (   )
3. In the equation $a = 2.5 + 8.7$, the variable "**a**" represents the difference between **8.7** and **2.5**. (   )
4. The equation $4.5 + 6.25 = x$ is the same as the equation $6.25 + 4.5 = y$. (   )
5. The equation that represents "12.5 plus a number equals 15" is $12.5 + b = 15$. (   )

Third: **Match:**

1. The difference between 18.5 **and** 12.5
2. The sum of 18.5 **and** 12.5
3. 12.5 **plus** a number equals 18.5
4. 18.5 **minus** a number equals 12.5
5. A number **plus** 12.5 equals 18.5

(a) $a = 18.5 + 12.5$
(b) $a = 18.5 - 12.5$
(c) $18.5 - a = 12.5$
(d) $a + 12.5 = 18.5$
(e) $12.5 + a = 18.5$

Exercises on Lessons 2-4

Variables in Equations, Finding the Unknown & Telling Stories with Numbers

1 **Use mental math to estimate the equations, and then solve them:**

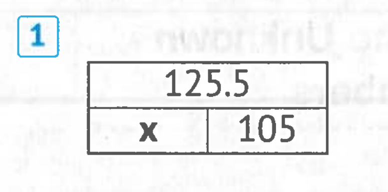
1. $2.45 + n = 5.24$ — n = ... n = ...
2. $y - 12.40 = 3.01$ — y = ... y = ...
3. $8.5 - m = 4.25$ — m = ... m = ...
4. $8.12 + x = 20$ — x = ... x = ...
5. $2.30 + 3.10 = 1.50 + v$ — v = ... v = ...
6. $2.377 + 3.1 = 1.52 + a$ — a = ... a = ...
7. $63 - 15 = p + 10$ — p = ... p = ...

2 **Complete the following:**

1. If $2.5 + 3.5 + y = 16$, then y = ...
2. If $x + 15.2 = 14.5 + 15.5$, then x = ...
3. If $95 - 65.27 = z - 29.73$, then z = ...
4. If $10.5 - 2.5 = a - 8$, then a = ...
5. If $m = 1.28$, then $m + 37.72 =$ ....
6. If $b = 3.25$, then $b + 56.75 =$ ....
7. If $e = 17.102$, then $e - 11.102 =$ ....
8. If $r = 32.5$, then $48 - r =$ ....

3 Write an equation that expresses each of the following bar models, then find the value of the variable "x":

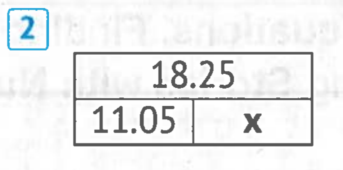
1



....

....

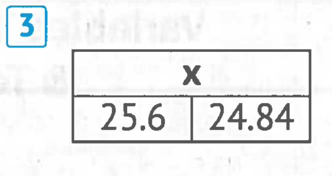
2



....

....

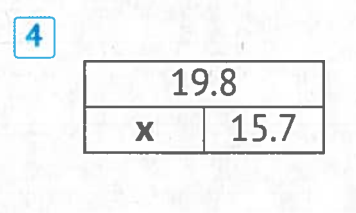
3



....

....

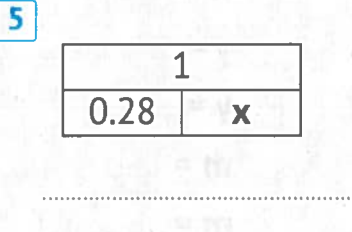
4



....

....

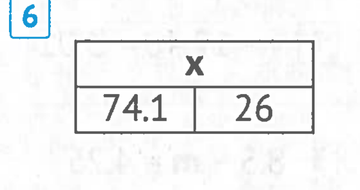
5



....

....

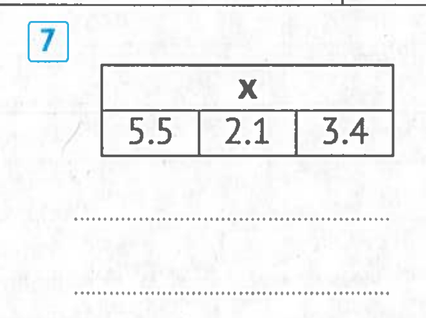
6



....

....

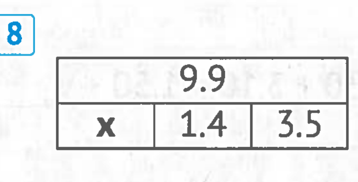
7



....

....

8



....

....

4 Choose the correct answer:

1. If 63.5 + **m** = 108.5, then **m** = ... (45 or 172 or 45.5 or 171.5)
2. If 75.5 – **x** = 15.5, then **x** = ... (91 or 60 or 90.1 or 60.5)
3. If **a** – 12.3 = 14.7, then **a** = ... (2.4 or 270 or 27 or 24)
4. If 3.45 + **y** = 7.13 + 2.15, then **y** = ... (9.28 or 3.68 or 12.73 or 5.83)
5. If **w** – 12.5 = 8.5 – 3.5, then **w** = ... (17.5 or 4 or 7.5 or 9)
6. The bar model that expresses the equation x + 3.5 = 11.3 is ....

(

11.3	
x	3.5

or

11.3	
8	x

or

x	
3.5	11.3

or

11.3	
x	8

)

7 The bar model that expresses the equation $s - 1.2 = 5.8$ is ....

(

5.8	
s	1.2

or

1.2	
5.8	s

or

s	
5.8	1.2

or

7	
s	5.8

)

8 The bar model that expresses the equation $m - 6.5 = 15.5$ is ....

(

m	
6.5	15.5

or

6.5	
15.5	m

or

15.5	
m	6.5

or

m	
6.5	9.5

)

9 The equation that expresses the corresponding bar model is ....

3.8	
y	2.7

($y + 2.7 = 3.8$ or $y - 2.7 = 3.8$ or $y - 3.8 = 2.7$ or $y + 3.8 = 2.7$)

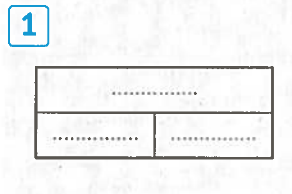
10 The equation that expresses the corresponding bar model is ....

w	
4.8	2.5

($w + 2.5 = 4.8$ or $4.8 - w = 2.5$ or $w = 4.8 - 2.5$ or $w - 2.5 = 4.8$)

5 Express each of the following equations using the bar model, and then solve the equation:

1



$m + 2.5 = 3.7$

m = ...

2

....	
....	....

$u - 3.75 = 9$

u = ...

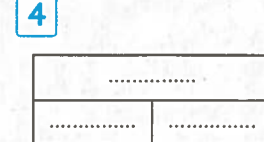
3



$9.8 - v = 6.7$

v = ...

4



$9.1 + 2.7 = s$

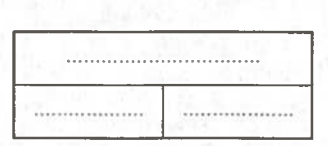
s = ...

6 Write an equation to represent the story problems using (n) as the variable and find its value. Use the bar models.

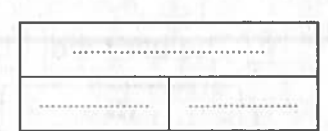
1 The distance between Cairo and Alexandria via the agricultural road is 225 km. Damanhour is located on the agricultural road, 61.3 km from Alexandria. How far is the distance between Damanhour and Cairo?

....

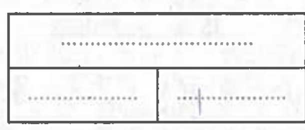
....



2 The sum of the height of the school building and the height of a tree adjacent to the building is 28.7 m. If the height of the school building is 20.5 meters, find the height of the tree.

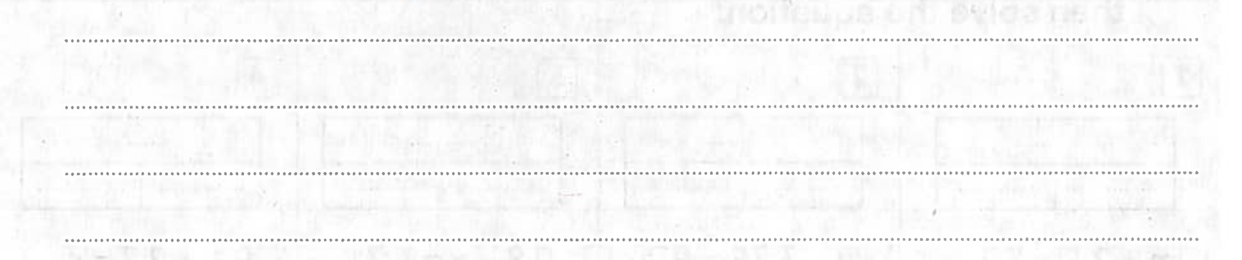


3 If Ahmed weighed 40.7 kg two years ago and his weight increased by 6.9 kg, what is Ahmed's weight now?



7 Write a story problem representing each equation, and then solve it:

1 $9.25 + 2.75 = m$



2 $x - 125 = 45.8$



Assessment on Lessons 2-4

First: Choose the correct answer:

1 If 78.45 + **y** = 90, then **y** = ...

ⓐ 78.45 ⓑ 90 ⓒ 168.45 ⓓ 11.55

2 If 12 − **m** = 5.125, then **m** = ...

ⓐ 12 ⓑ 5.125 ⓒ 6.875 ⓓ 17.125

3 If 2.5 + 3.4 + **x** = 7, then **x** = ...

ⓐ 2.5 + 3.4 + 7 ⓑ 7 − 2.5 + 3.4 ⓒ 7 − (2.5 + 3.4) ⓓ (7 + 2.5) − 3.4

4 If 5.4 + 2.6 = **c** − 1.9, then **c** = ...

ⓐ 6.1 ⓑ 8 ⓒ 9.9 ⓓ 7.3

5 The bar model that expresses the equation x + 5.5 = 7 is ....

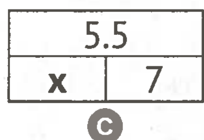
ⓐ

7	
x	1.5

ⓑ

x	
7	5.5

ⓒ



ⓓ

7	
x	5.5

Second: Complete the following:

1 If 8.5 + **y** = 15, then **y** = ...

2 If 2.125 − **z** = 6.782 − 6.75, then **z** = ...

3 If **m** = 3.25, then **m** + 3.275 = ...

4 The value of **x** in the bar model is ....

8.005	
4.08	x

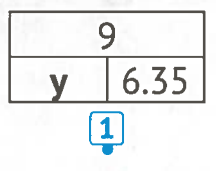
5 The equation that expresses the **bar model** is ....

12	
y	2.35

Third:

Match each model to the appropriate equation:

1



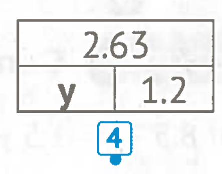
2

y	
9.25	2.35

3

y	
1.2	2.63

4



ⓐ y = 1.2 + 2.63 ⓑ y = 9.25 − 6.35 ⓒ y = 2.63 − 1.2 ⓓ y = 2.63 + 1.2

Fourth:

Ezz ran **3 days** last week, he ran **5.24 km** on Monday and **6.50 km** on Wednesday. If the total distance he ran during the week is **15 km**, what is the distance he ran on Friday? Write an equation to represent the problem, use **(m)** as the variable and find its value. Use the bar model.

....		
......	......	......

....

Assessment on Concept 1

First: Choose the correct answer:

1. $2.15 + x = 9.25$ is ....

   ⓐ a variable ⓑ a mathematical expression ⓒ an equation ⓓ other

2. If $28.45 - y = 15.05$, then $y =$ ....

   ⓐ 13.40 ⓑ 43.50 ⓒ 28.45 ⓓ 15.05

3. In the equation $38.50 + x = 80.25$, if 80.25 represents the amount that Hossam owns and 38.50 represents the amount remaining with him, then x represents ....

   ⓐ the amount he owns ⓑ the amount he has left

   ⓒ the amount he spent ⓓ other

4. The equation that represents the sum of 6.35 **and** 3.14 is ....

   ⓐ $m = 6.35 + 3.14$ ⓑ $m - 3.14 = 6.35$ ⓒ $m - 6.35 = 3.14$ ⓓ $m = 6.35 - 3.14$

5. The bar model that expresses the equation $x - 2.6 = 1.4$ is ....

ⓐ

2.6	
x	4

ⓑ

x	
2.6	1.4

ⓒ

1.4	
x	2.6

ⓓ

2.6	
x	1.4

Second: Complete the following:

1. If $8.5 - y = 1.5 + 6.5$, then $y =$ ....

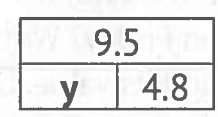
2. If $5.52 + 2.01 + x = 9.21$, then $x =$ ....

3. If $m = 3.01$, then $m - 0.5 =$ ....

4. Using the equation $f + 0.28 = 9.07$, complete the corresponding bar model.

....	
....	....

5. The equation that expresses the corresponding bar model is ....



9.5	
y	4.8

Third: **Put (✓) for the correct statement and (✗) for the wrong statement:**

1. "$x + 3.2 = 1.2 + 7.8$" is called a variable. ( )
2. The equation $7.2 + 1.05 = x$ is similar to the equation $1.05 + 7.2 = y$. ( )
3. If $5.63 - m = 2.15$, then $m = 5.63 + 2.15$. ( )
4. The equation that represents the difference between 18.5 and 12.5 is $z - 18.5 = 12.5$. ( )
5. The equation that represents the corresponding bar model is $9.05 + w = 11.35$. ( )

11.35	
9.5	w

Fourth: **Write the equation that represents each bar model, and then solve it:**

1.

30.258	
15.27	m

....

....

2.

y	
3.05	4.123

....

....

3.

9.253	
x	6.7

....

....

Fifth: **Answer the following:**

1. Bassem bought **two** watermelons with a total mass of **2.64 kg**. If the first watermelon had a mass of **1.36 kg**, what is the mass of the second watermelon? Write an equation to represent the problem, use (**m**) as the variable and find its value. Use the bar model.



2. Write a story problem representing the following equation and then solve it:

$w = 9.2 - 5.025$

....

....

Concept

2.2 Factors and Multiples

Exercises on Lessons 5 & 6

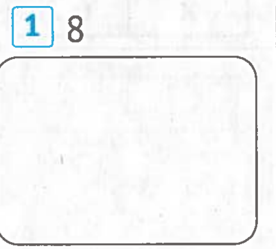
Finding Factors & Prime Factorization

1 **Fill in the missing factors represented by the variables:**

1 $3 \times m = 15$ $m =$	2 $v \times 7 = 49$ $v =$	3 $8 \times t = 48$ $t =$ ....
4 $g \times 5 = 65$ $g =$	5 $u \times 12 = 48$ $u =$	6 $9 \times e = 63$ $e =$ ....

2 **Find the factors of each of the following numbers using the method you prefer:**

1 8



The factors of **8** are:

....

....

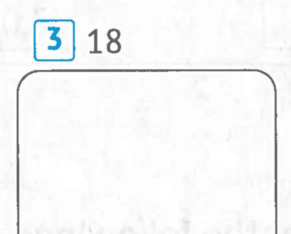
2 12

The factors of **12** are:

....

....

3 18



The factors of **18** are:

....

....

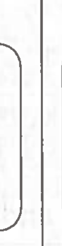
4 24

The factors of **24** are:

....

....

5 16



The factors of **16** are:

....

....

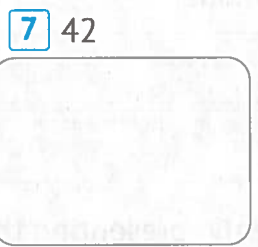
6 30

The factors of **30** are:

....

....

7 42



The factors of **42** are:

....

....

8 60

The factors of **60** are:

....

....

3 Factorize each number into its **prime factors** using the **factor tree**:

1 6	2 10	3 12	4 16
6 = ...	10 = ...	12 = ...	16 = ...
5 18	6 24	7 32	8 36
18 = ...	24 = ...	32 = ...	36 = ...

4 Complete the following sentences:

1. The number of factors of a prime number is .... factors.
2. All prime numbers are odd numbers, except .... which is an even number.
3. .... is the smallest prime number.
4. .... is the smallest odd prime number.
5. .... is a number greater than one and has only two factors.
6. The smallest 2-digit prime number is ....
7. The prime numbers less than 10 are ....
8. The number of factors of 25 is .... factors.
9. 1, 2, 4, 8, 16 are the factors of ....
10. The prime factors of 21 are ....
11. 2 is a factor of all numbers whose Ones digit is ...., ..., ..., ... or ....
12. The number whose prime factors are 2, 3, 3 is ....

13 If the prime factors of a number are 2 X 3 X 3, then the factors of this number are ....

14 If the factors of a number are 1, 2, 4, 8, then the prime factors of this number are ....

5 Choose the correct answer:

1 .... is a factor of all numbers. (0 or 1 or 2 or 3)

2 The number of factors of 9 is .... factors. (2 or 3 or 4 or 6)

3 .... is a prime number. (51 or 52 or 57 or 59)

4 The two numbers 3 and 5 together are prime factors of .... (30 or 25 or 18 or 53)

5 The prime number .... (has no factors or has one factor only or has two factors only or has three factors only)

6 .... is a factor of 24. (14 or 18 or 17 or 12)

7 The numbers 2, 3, 5, 7 are .... numbers . (even or odd or prime or composite)

8 The prime factors of 12 are .... (2 x 6 or 3 x 4 or 2 x 2 x 3 or 1 x 12)

9 If the factors of a number are 1, 2, 3, 6, then its prime factors are .... (1 X 6 or 1 X 2 or 2 X 3 or 2 X 6)

10 If the prime factors of a number are 2 X 2 X 2, then the number is .... (8 or 4 or 6 or 222)

6 Put (✓) in front of the correct statement, and (X) in front of the wrong statement:

1 **17** is a prime number. (   )

2 **22** is a composite number. (   )

3 The prime number whose sum of factors is **8** is **7**. (   )

4 The smallest prime number is **1**. (   )

5 All prime numbers are **odd** numbers. (   )

6 **4** is a prime number because it has more than two factors. (   )

7 The smallest even prime number is **2**. (   )

8 The smallest odd prime number is **3**. (   )

9 2, 2 and 5 are the prime factors of **10**. (   )

Assessment on Lessons 5&6

First: Choose the correct answer:

1. The number of factors of **16** is ....
   (a) 3 (b) 4 (c) 5 (d) 6
2. If the factors of a number are **1, 2, 3, 4, 6, 12**, then its prime factors are ....
   (a) 2 x 2 x 3 (b) 3 x 4 (c) 2 x 6 (d) 1 x 12
3. The **smallest** prime number formed from two digits is ....
   (a) 2 (b) 10 (c) 11 (d) 12
4. **4** is a factor of ....
   (a) 14 (b) 34 (c) 22 (d) 32
5. The two numbers **2** and **7** together are prime factors of ....
   (a) 72 (b) 14 (c) 27 (d) 9

Second: Match:

1. Factors of **20**	(a) 2, 3, 5, 7
2. Prime factors of **20**	(b) 1, 2, 4, 5, 10, 20
3. Prime numbers less than **10**	(c) 2, 3, 3
4. Factors of **18**	(d) 2, 2, 5
5. Prime factors of **18**	(e) 1, 2, 3, 6, 9, 18

Third: Complete the following:

1. All prime numbers are odd numbers, except .... is an even number.
2. If **a** X 9 = 36, then **a** = ...
3. The prime factors of 25 are: **25** = ...
4. **5** is a factor of the numbers whose Ones digit is .... or ....
5. A number whose prime factors are **2, 2** and **5** is ....

Fourth: Factorize each number into its prime factors using the factor tree:

1. 45

   45 = ...

2. 32

   32 = ...

3. 60

   60 = ...

Exercises on Lesson 7

Greatest Common Factors (GCF)

1 Find the greatest common factor (GCF) of each of the following:

1) 12, 8

12 = ...

8 = ...

GCF = ... = ...

2) 16, 20

16 = ...

20 = ...

GCF = ... = ...

3) 9, 18

9 = ...

18 = ...

GCF = ... = ...

4) 18, 35

18 = ...

35 = ...

GCF = ... = ...

5) 32, 24

32 = ...

24 = ...

GCF = ... = ...

6) 36, 48

36 = ...

48 = ...

GCF = ... = ...

7) 60, 45

60 = ...

45 = ...

GCF = ... = ...

8) 42, 28

42 = ...

28 = ...

GCF = ... = ...

9) 4 X 8 , 6 X 2 X 2

....

....

GCF = ... = ...

10) 6 X 9 , 8 X 9

....

....

GCF = ... = ...

2 Complete the following sentences:

1. If $y = 2 \times 2 \times 2 \times 2$, then y = ...
2. If $d = 3 \times 3 \times 5$, then d = ...
3. The factors of 27 are ....
4. The factors of 31 are ....
5. The prime factors of 17 are ....
6. The prime factors of 26 are ....
7. The greatest common factor of 3 and 5 is ....
8. The greatest common factor of 7 and 14 is ....
9. The prime number whose factors sum is 12 is ....
10. The first number between 90 and 100 is ....

3 Choose the correct answer:

1. The prime factors of 14 are .... (2X7 or 1X14 or 1X2X7 or 2X3X4)
2. The prime factors of 16 are .... (2X8 or 2X2X4 or 4X4 or 2X2X2X2)
3. If the **prime** factors of a number are 2,3,3, then the factors of this number are .... (1,2,3,3 or 1,2,9,18 or 1,2,3,6,9,18 or 1,3,6,19)
4. If the **prime** factors of a number are 2,2,5, then the factors of this number are .... (1,2,5,10 or 1,4,5,10 or 2,4,5,10 or 1,2,4,5,10,20)
5. The **greatest common factor** of any two prime numbers is .... (the largest number or the smallest number or one or zero)
6. The **greatest common factor** of two numbers, one of which is a factor of the other is .... (the largest number or the smaller number or the product of the two numbers or the sum of the two numbers)
7. The **greatest common factor** of 28 and 14 is .... (7 or 2 or 28 or 14)
8. The **greatest common factor** of 11 and 5 is .... (11 or 5 or 1 or 16)
9. The common **prime** factors of two numbers are 2, 2, 3, then the **GCF** For these two numbers .... (223 or 7 or 12 or 24)
10. The **common** factor of two numbers are 1, 2, 3, 6, then the **GCF** for these two numbers is .... (36 or 6 or 12 or 16)

Assessment on Lesson 7

First: **Choose the correct answer:**

1. The prime factors of **14** are ....
   - a) 2
   - b) 2, 7
   - c) 1, 2, 7, 14
   - d) 2
2. If the **prime** factors of a number are **2, 2, 3**, then the factors of this number are ....
   - a) 2 X 2 X 3
   - b) 2 , 6
   - c) 12
   - d) 1,2,3,4,6,12
3. The **greatest common factor** of any two prime numbers is ....
   - a) the largest number
   - b) the smallest number
   - c) 1
   - d) there is no common factors
4. The greatest common factor of **21** and **7** is ....
   - a) 7
   - b) 21
   - c) 28
   - d) 14
5. The common **prime** factors of two numbers are: **2, 3, 5**, then the GCF of these two numbers is ....
   - a) 6
   - b) 30
   - c) 10
   - d) 2

Second: **Complete the following sentences:**

1. If **n** = 2 X 2 X 7 then, n = ...
2. The factors of **23** are ....
3. The prime factors of **19** are ....
4. The **greatest common factor** of **8** and **5** is ....
5. A prime number whose factors sum is **6** is ....

Third: **Find the greatest common factor for each of the following:**

1. **30 , 20**

   30 = ...

   20 = ...

   GCF = ... = ...

2. **12 , 48**

   12 = ...

   48 = ...

   GCF = ... = ...

Fourth:

Find the **greatest common factor** for the two numbers (6 X 6) and (5 X 8).

....

Exercises on Lessons 8 & 9

Identifying Multiples & Least Common Multiple (LCM)

1 Circle the multiples of the following numbers:

1. 3 → 2 , 6 , 12 , 14 , 21 , 25 , 30 , 37 , 42
2. 6 → 0 , 2 , 18 , 21 , 30 , 42 , 52 , 56 , 60
3. 10 → 5 , 15 , 10 , 25 , 35 , 40 , 50 , 95 , 100
4. 5 → 8 , 12 , 25 , 45 , 59 , 85 , 150 , 551 , 15
5. 7 → 2 , 14 , 27 , 35 , 47 , 49 , 63 , 77 , 81

2 Answer the following:

1.
   a. List the first 10 multiples of 3: ....
   b. List the first 5 multiples of 6: ....
   c. The common multiples of 3 and 6 of those you listed: ....
   d. The least common multiple of the two numbers is ....
2.
   a. List the first 7 multiples of 6: ....
   b. List the first 7 multiples of 4: ....
   c. The common multiples of 6 and 4 of those you listed: ....
   d. The least common multiple of the two numbers is ....
3.
   a. List the first 5 multiples of 8: ....
   b. List the first 10 multiples of 4: ....
   c. The common multiples of 8 and 4 of those you listed: ....
   d. The least common multiple of the two numbers is ....
4.
   a. List the first 10 multiples of 2: ....
   b. List the first 5 multiples of 6: ....
   c. List the first 8 multiples of 8: ....
   d. The common multiples of 2, 6 and 8 of those you listed: ....
   e. The least common multiple of the numbers is ....

3 Find the GCF and LCM for each of the following:

1 8, 6

8 = ...

6 = ...

GCF = ... = ...

LCM = ... = ...

2 12, 16

12 = ...

16 = ...

GCF = ... = ...

LCM = ... = ...

3 15, 6

15 = ...

6 = ...

GCF = ... = ...

LCM = ... = ...

4 10, 8

10 = ...

8 = ...

GCF = ... = ...

LCM = ... = ...

5 18, 12

18 = ...

12 = ...

GCF = ... = ...

LCM = ... = ...

6 21, 14

21 = ...

14 = ...

GCF = ... = ...

LCM = ... = ...

7 28, 14

28 = ...

14 = ...

GCF = ... = ...

LCM = ... = ...

8 24, 36

24 = ...

36 = ...

GCF = ... = ...

LCM = ... = ...

4 choose the correct answer:

1. .... is a multiple of **9**. (19 or 6 or 3 or 27)
2. **14** is a multiple of .... (4 or 7 or 21 or 28)
3. The common multiple of all numbers is .... (1 or 2 or 3 or 0)
4. The LCM of **9** and **6** is .... (54 or 36 or 18 or 9)
5. The LCM of **8** and **10** is .... (10 or 80 or 8 or 40)
6. .... is a number that has more than one set of factor pairs
   (Prime number or Factor or Multiple or Composite number)
7. .... is the number that is **multiplied** by another number to get the product. (Prime number or Factor or Multiple or Composite number)
8. Counting by jumping is a way to find the .... of a number.
   (sum or factors or multiples or other)
9. The least common multiple of any **two** prime numbers is ....
   (the largest number or the smaller number or the product of the two numbers or the sum of the two numbers)
10. The least common multiple of **two** numbers, one of which is a factor of the other is .... (the largest number or the smaller number or the product of the two numbers or the sum of the two numbers)

Assessment on Lessons 8&9

First: Choose the correct answer:

1. .... is a multiple of **8**.
   - ⓐ 2 ⓑ 4 ⓒ 16 ⓓ 6
2. **24** is a multiple of ....
   - ⓐ 16 ⓑ 14 ⓒ 8 ⓓ 9
3. The **common multiple** of all numbers is ....
   - ⓐ 0 ⓑ 1 ⓒ 2 ⓓ 3
4. The LCM of **8** and **4** is ....
   - ⓐ 4 ⓑ 8 ⓒ 16 ⓓ 12
5. The LCM of **3** and 5 is ....
   - ⓐ 8 ⓑ 15 ⓒ 30 ⓓ 45

Second: Use the following words to complete:

(Prime, factor, One, composite number, multiples)

1. A .... is a number with more than one set of factor pairs.
2. A .... is a number that is multiplied by another number to get a product.
3. Skip counting is a way to find the .... of a number.
4. .... is a factor of all numbers.
5. A .... number's only factor pair is one and itself.

Third: Find the GCF and LCM for each of the following:

1. **8, 16**
   - 8 = ...
   - 16 = ...
   - **GCF** = ... = ...
   - **LCM** = ... = ...
2. **15, 20**
   - 15 = ...
   - 20 = ...
   - **GCF** = ... = ...
   - **LCM** = ... = ...

Fourth: Find the LCM for the numbers 6, 8, and 12.

1. The multiples of **6** are: ...., ..., ..., ..., ..., ..., ..., ..., ...
2. The multiples of **8** are: ...., ..., ..., ..., ..., ..., ...
3. The multiples of **12** are: ...., ..., ..., ...
4. The **common multiples** are: ....
5. **LCM** = ...

Exercises on Lesson 10

Factors or Multiples?

1 Find the GCF and LCM for each of the following:

1. 12, 8

GCF = ...
LCM = ...

2. 6, 9

GCF = ...
LCM = ...

3. 16, 20

GCF = ...
LCM = ...

4. 14, 21

GCF = ...
LCM = ...

5. 6, 15



GCF = ...
LCM = ...

6. 24, 16

GCF = ...
LCM = ...

7. 45, 30

GCF = ...
LCM = ...

8. 25, 15

GCF = ...
LCM = ...

2 Answer the following:

1. Mohamed trains to lift weights every 4 days and trains for tennis every 6 days. After how many days will Mohamed play tennis and lift weights on the same day?

....

....

....

....

2. Omnia has two strips of fabrics. One is 45 centimeters wide, and the other is 75 cm wide. She wants to cut both pieces into strips of equal width that are as wide as possible. How wide should she cut the strips?

....

....

....

....

3. Ola sells baskets of figs each holding 9. She also sells bags of pomegranates, each holding 7. If she sells the same number of each, what is the smallest quantity of each type of fruit that she sold?

....

....

....

....

4. Two alarms, one of which rings regularly every two hours, and the other rings regularly every 3 hours. If the two alarms rang together at 12 o'clock, at what hour did they ring together for the first time after that?

....

....

....

....

5 A dealer has 18 kg of oranges and 27 kg of apples. If the dealer wants to divide the oranges and apples into bags of the same mass. What is the largest number of bags for each type of fruit to have bag with the same masses? How many kilograms of oranges will each bag contain? How many kilograms of apples will each bag contain?

....

....

....

....

6 A hospital has 12 doctors, and 28 nurses. Find the largest number of equal groups that can be formed of both doctors and nurses. How many doctors are in each group? What is the number of nurses in each group?

....

....

....

....

7 Mahmoud wanted to divide 24 pens and 36 notebooks into groups, so that each group contains the same number of tools. What is the largest number of groups that can be formed for each type of tool, so that each group has the same number?

....

....

....

....

8 Adel goes to the club every 3 days to train for football, and his friend Ahmed goes to the same club every 4 days to train for volleyball. After how many days do the two friends meet?

....

....

....

....

Assessment on Lesson 10

First: Choose the correct answer:

1. The GCF for **12** and **18** is ....
   (a) 2 (b) 3 (c) 6 (d) 9
2. The LCM for **6** and **8** is ....
   (a) 2 (b) 24 (c) 48 (d) 14
3. The number of factors of **24** is ....
   (a) 8 (b) 6 (c) 3 (d) 12
4. Which of the following is a multiple of **12**?
   (a) 6 (b) 3 (c) 12 (d) 4
5. Which of the following is a common multiple of **9** and **6**?
   (a) 3 (b) 12 (c) 27 (d) 18

Second: Complete the following sentences:

1. The factors of **27** are ....
2. The multiples of **6** between **20** and **30** are ....
3. The prime factors of **27** are ....
4. The greatest common factor of **18** and **12** is ....
5. The LCM of **12** and **8** is ....

Third: Answer the following:

1. Menna is giving her friends pencils and erasers. The store sells pencils in boxes of **8** and erasers in boxes of **10**. If Menna wants the same number of each, what is the minimum number of pencils that she will have to buy?

   ....

   ....

2. Nour is making snack bags for an upcoming trip. He has **6** oranges and **12** pieces of dried fruit. He wants the snack bags to be identical without any food left over. What is the greatest number of snack bags that Nour can make?

   ....

   ....

Assessment on Concept 2

First: Choose the correct answer:

1 The .... number has only **two** factors.

ⓐ prime ⓑ composite ⓒ even ⓓ odd

2 **1, 2, 5** and **10** are factors of ....

ⓐ 1 ⓑ 5 ⓒ 10 ⓓ 18

3 .... is a common multiple of **10** and **5**.

ⓐ 20 ⓑ 15 ⓒ 5 ⓓ 24

4 All the following numbers are multiples of **8**, except ....

ⓐ 16 ⓑ 24 ⓒ 32 ⓓ 36

5 The greatest common factor of **12** and **6** is ....

ⓐ 2 ⓑ 3 ⓒ 6 ⓓ 12

Second: Complete the following sentences:

1 .... is a common factor of all numbers.

2 **40, 25, 15** are multiples of the number ....

3 .... is a common multiple of all numbers.

4 The LCM of **15** and **30** is ....

5 If **40 = 5 x 8**, then .... is a multiple of the two numbers .... and ....

Third: Put (✓) for the correct statement and (✗) for the wrong statement:

1 **2** is an odd prime number. (   )

2 The GCF for the numbers **2** and **3** is **3**. (   )

3 The prime factors of **18** are 1, 2, 3, 6, 9, 18. (   )

4 **14** is the LCM of **2** and **14**. (   )

5 0 and 7 are the multiples of **7**. (   )

Fourth: Answer the following:

Sameh wanted to divide **21** pens and **35** notebooks into groups, so that each group contains the same number of tools. What is the largest number of groups that can be formed for each type of tool?

How many pens are in each group? How many notebooks are in each group?

....

....

Unit 3

Concept

Multiplication with Whole Numbers

3.1 | Models for Multiplication

Exercises on Lessons 1 & 2

The Power of Ten & Using the Area Model to Multiply

1 Complete the following:

1. 4 X 10 = ...
2. 5 X 10 = ...
3. 8 X 100 = ...
4. 9 X 100 = ...
5. 2 X 1,000 = ...
6. 6 X 10,000 = ...
7. .... X 10 = 30
8. .... X 10 = 70
9. .... X 100 = 400
10. .... X 100 = 200
11. .... X1,000 = 7,000
12. .... X 100,000 = 500,000
13. 8 X .... = 80
14. 2 X .... = 20
15. 3 X .... = 300
16. 7X .... = 7,000
17. 1 X .... = 100,000
18. 5 X .... = 50,000

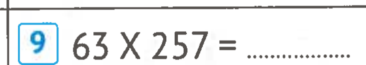
2 Multiply using the area model:

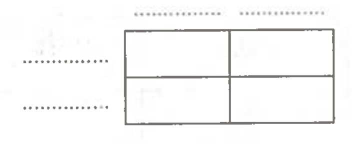
1. 5 X 24 = ...
2. 9 X 385 = ...
3. 842 X 6 = ...

4 4 X 217 = ...

5 23 X 18 = ...

6 43 X 54 = ...



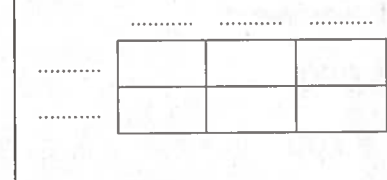


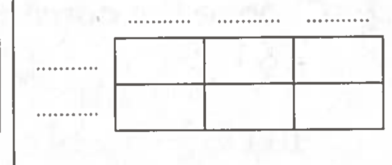
7 42 X 102 = ...

8 89 X 450 = ...

9 63 X 257 = ...



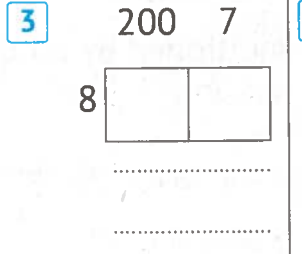




10 28 X 134 = ...

11 325 X 12 = ...

12 275 X 45 = ...



3 Write the multiplication problem that expresses the following models, and then solve it:

1 80 6 / 5

....

....

2 40 3 / 7

....

....

3 200 7 / 8

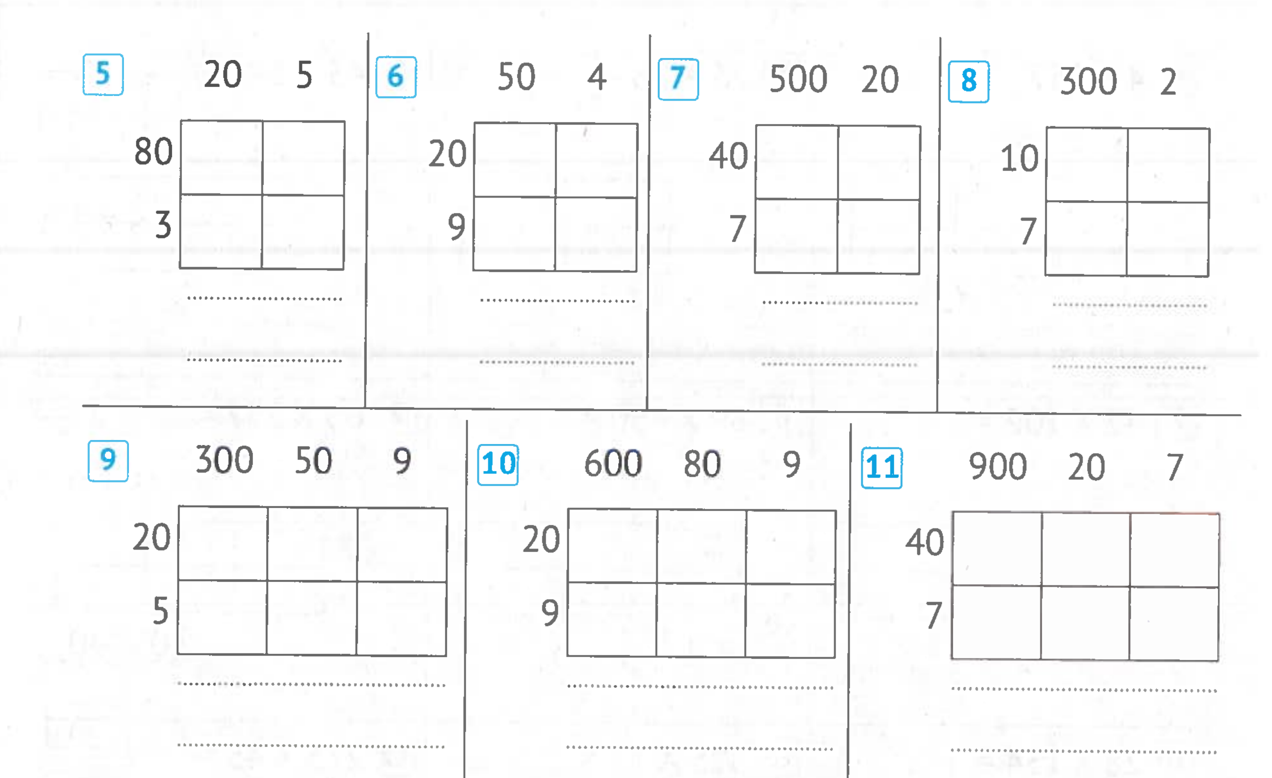
....

....

4 400 50 7 / 9

....

....



4 Choose the correct answer:

1. 8 X .... = 8,000 (10 or 100 or 1,000 or 0.001)
2. 100 X .... = 700 (7 or 70 or 700 or 7,000)
3. 6 X 10,000 = ... (600,000 or 60,000 or 6,000 or 600)
4. 5 kg = ... gm. (50 or 500 or 5,000 or 0.005)
5. 5 X 100 ⬭ 4 X 1,000 (> or = or < or ≤)
6. 2 X 10,000 ⬭ 9 X 1,000 (> or = or < or ≤)
7. When 8.67 is multiplied by 10, the value of 6 changes to ....
   (0.06 or 0.6 or 6 or 60)
8. The multiplication problem that expresses the corresponding area model is ....

5	500	400	15

   (5 X 915 or 5 X 183 or 143 or 5 X 12)

9. The multiplication problem that expresses the corresponding model is ....

	800	7
4		

   (4 X 870 or 4 X 807 or 4 X 780 or 4 X 708)

10 The multiplication problem that expresses the corresponding area model is ....

	30	6
20		
7		

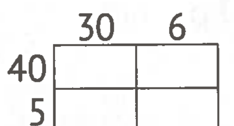
(36 X 27 or 63 X 72 or 207 X 306 or 26 X 37)

11 The multiplication problem that expresses the corresponding area model is ....

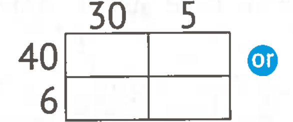
	300	70	5
10			
9			

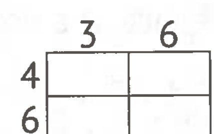
(19 X 15 or 19 X 312 or 19 X 375 or 573 X 91)

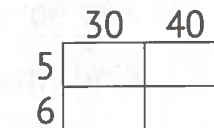
12 The area model that represents 45 x 36 is ....



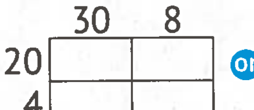




or


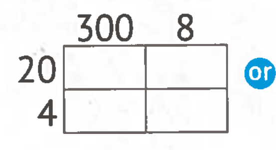
or


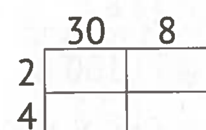
13 The area model that represents 24 X 308 is ....





300 8
2
4

or


14 The area model that represents 67 X 174 is ....

	1	7	4
60			
7			

or

	10	70	40
60			
7			

or

	100	70	4
60			
7			

or

	100	70	4
60			
7			

15 The multiplication problem that expresses the corresponding area model is ....

600	90
40	6

(690 X 46 or 640 X 96 or 23 X 32 or 203 X 32)

5 Answer the following:

1 Hazem bought 7 books, the price of each book is 10 pounds.

Find what Hazem paid.

....

....

2 Mona saves 100 pounds every month.

How much does Mona save in 5 months?

....

....

3 Amr bought 4 suits, the price of one suit is 10,000 pounds.

Find what Amr paid.

....

....

4 A box contains 200 balls. How many balls are in eight similar boxes?

....

....

Assessment on Lessons 1&2

First: Choose the correct answer:

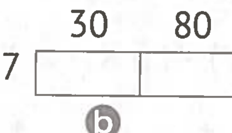
1. 5 X .... = 5,000
   - ⓐ 10
   - ⓑ 100
   - ⓒ 1,000
   - ⓓ 10,000
2. 8 X 1,000 ⬭ 20 X 40
   - ⓐ <
   - ⓑ =
   - ⓒ >
   - ⓓ ≥
3. 8,000 = ...
   - ⓐ 8 X 10
   - ⓑ 8 X 100
   - ⓒ 8 X 1,000
   - ⓓ 8 X 10,000
4. The multiplication problem that expresses the following model is ....
   - ⓐ 24 X 48
   - ⓑ 24 X 720
   - ⓒ 24 X 32
   - ⓓ 640 X 128

20	4
600	120
40	8

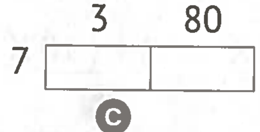
5. The model that expresses the following multiplication problem 7 X 308 is ....

ⓐ

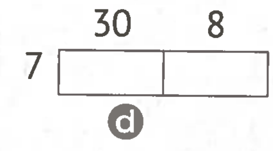
	300	8
7		

ⓑ 

	30	80
7		

ⓒ 

	3	80
7		

ⓓ 

	30	8
7		

Second: Complete the following:

1. 1,000 X 3 = ...
2. 100 X .... = 500
3. .... X 9 = 900,000
4.

	40	5
....	1,200	....
....	....	15

5.

	....	5
....	....	350
5	200	....

Third: Match:

1. 4 X 100
2. 4 X 10
3. 4 X 1,000
4. 4 X 100,000
5. 4 X 10,000

- ⓐ 40
- ⓑ 4,000
- ⓒ 400
- ⓓ 40,000
- ⓔ 400,000

Fourth: Answer the following:

Aya ran a **5**-kilometer race on Saturday. If there are **1,000** meters in **1** kilometer, how many meters did she run?

....

Exercises on Lessons 3 & 4

The Distributive Property of Multiplication & Using the Partial Products Model to Multiply

1 Find the product using the **Distributive Property**:

1. 8 X 27 = (8 X ....) + (8 X ....) = ... + ... = ...
2. 6 X 27 = ...
3. 7 X 306 = (7 X ....) + (7 X ....) = ... + ... = ...
4. 9 X 283 = ...
5. 15 X 79 = (10 + 5) X (70 + 9)

   = (10 X ....) + (10 X ....) + (5 X ....) + (5 X ....)

   = ... + ... + ... + ... = ...
6. 23 X 68 = ...

   = ...

   = ...
7. 24 X 624 = (........ + ...) X (........ + ... + ...)

   = ...

   = ...

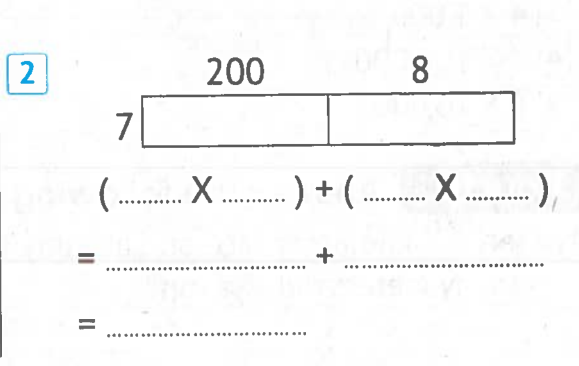
2 Solve using the **area model**:

1.
	40	5
8		

(........ X ....) + (........ X ....)

= .... + ...

= ....

2.


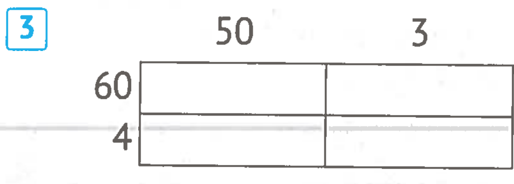
	200	8
7		

(........ X ....) + (........ X ....)

= .... + ...

= ....

3



(.... X ....) + (.... X ....) + (.... X ....) + (.... X ....)

= .... + ... + ... + ...

= ....

4

40 7

10

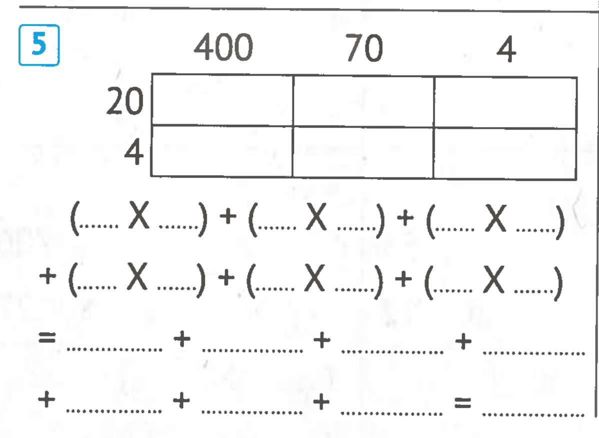
3

(.... X ....) + (.... X ....) + (.... X ....) + (.... X ....)

= .... + ... + ... + ...

= ....

5



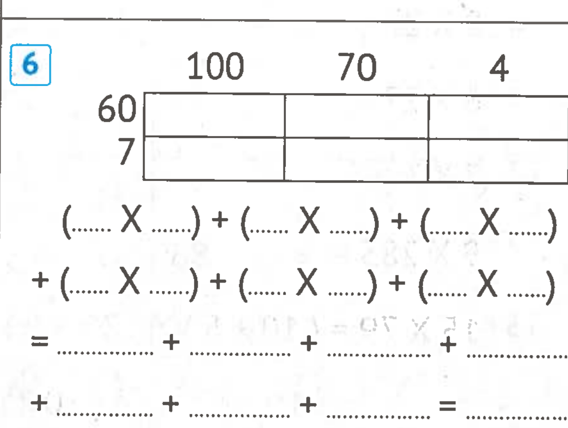
(....... X ....) + (....... X ....) + (....... X ....)

+ (....... X ....) + (....... X ....) + (....... X ....)

= .... + ... + ... + ...

+ .... + ... + ... = ...

6



(....... X ....) + (....... X ....) + (....... X ....)

+ (....... X ....) + (....... X ....) + (....... X ....)

= .... + ... + ... + ...

+ .... + ... + ... = ...

3 Solve using the **area model**:

1

....

....

(8 X 20) + (8 X 7)

= ....

2

....

....

(9 X 600) + (9 X 7)

= ....

3

....

....

....

(40 X 70) + (40 X 3) + (6 X 70) + (6 X 3)

= ....

4

....

....

....

(20 X 100) + (20 X 7) + (3 X 100) + (3 X 7)

= ....

5

....

....

....

(20 X 500) + (20 X 80) + (20 X 4)

+ (4 X 500) + (4 X 80) + (4 X 4)

= ....

6

....

....

....

(60 X 200) + (60 X 80) + (60 X 3)

+ (4 X 200) + (4 X 80) + (4 X 3)

= ....

4 Find the product using the partial products strategy:

1

	37
	X 8
(.......... X ....)	....
(.......... X ....)	+ ....
	....

2

	65
	X 9
(.......... X ....)	....
(.......... X ....)	+ ....
	....

3

	903
	X 5
(.......... X ....)	....
(.......... X ....)	+ ....
	....

4

	86
	X 32
(.......... X ....)	....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
	....

5

	53
	X 12
(.......... X ....)	....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
	....

6

	706
	X 27
(.......... X ....)	....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
	....

7

	549
	X 23
(.......... X ....)	....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
	....

8

	638
	X 12
(.......... X ....)	....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
	....

9

	347
	X 34
(.......... X ....)	....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
(.......... X ....)	+ ....
	....

5 Using the rectangle model, find the result of 74 x 12. Divide the numbers in three different ways:

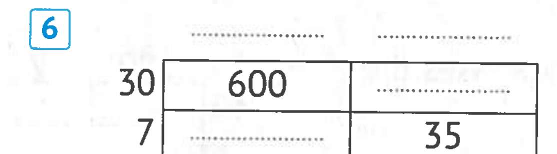
1. 45 X 27 = ... ⓐ ⓑ ⓒ

2. 73 X 15 = ... ⓐ ⓑ ⓒ

3. 21 X 479 = ... ⓐ  

4. 38 X 208 = ... ⓐ  

6 Complete the following:

1. 178 X 8 = 8 X (.................. + ... + ...)
2. 6 X (200 + 30 + 7) = ... X ....
3. 45 X 36 = (.................. + ...) X (.................. + ...)
4. 72 X 15
   = (70 X ....) + (70 X ....) + (2 X ....) + (2 X ....)
5. (30 X 500) + (30 X 20) + (7 X 500) + (7 X 20) = ... X ....
6. 

	....	....
30	600	....
7	....	35

7.

	....	3
....	8,000	....
4	800	....

8. (30 X 500) + (30 X 20) + (7 X 500) + (7 X 20) = ... X ....

9

		....
	X	....
(5 X 6)		....
(5 X 30)	+	....
(20 X 6)	+	....
(20 X 30)	+	....
		....

10

		95
	X	43
(........ X ....)		....
(........ X ....)	+	....
(........ X ....)	+	....
(........ X ....)	+	....
		....

11

		802
	X	....
(7 X ....)		....
(7 X ....)	+	....
(40 X ....)	+	....
(40 X ....)	+	....
		....

7 Choose the correct answer:

1. 5 X (600 + 2) = ... (5 X 8 or 5 X 62 or 5 X 602 or 5 X 6,002)
2. 8 X 420 = 8 X (................) (4 + 20 or + 20 or 400 + 2 or 400 + 20)
3. 12 X 200 + 12 X 30 + 12 X 5 = 12 X .... (12 or 205 or 230 or 235)
4. 56 X 93 = ...

   ((50+6) X (90+3) or (50X6) + (90X3) or (50+6) + (90+3) or (5+6) X (9+3))
5. (80X50) + (80X7) + (3X50) + (3X 7) = ...

   (85 X 37 or 83 X 57 or 87 X 35 or 78 X 35)
6. The multiplication problem that expresses the corresponding area model is ....

2,500	300
300	36

   (56 X 56 or 25 X 36 or 65 X 65 or 300 X 36)
7. The multiplication problem that expresses the corresponding area model is ....

	200	7
40		
8		

   (48 X 270 or 48 X 27 or 48 X 207 or 48 X 9)

8 The area model that represents (8X 200) + (8 X 6) is ....

	200	6
8		

or

	20	6
8		

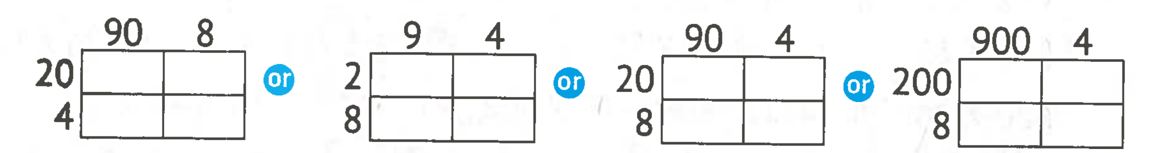
or

	200	60
8		

or

	20	60
8		

9 The area model that represents (20 + 8) X (90 + 4) is ....



10 The area model that represents

(50 X 70) + (50 X 3) + (4 X 70) + (4 X 3) is ....

	4	3
50		
70		

or

	70	3
50		
4		

or

	70	4
50		
3		

or

	7	3
5		
4		

Assessment on Lessons 3&4

First: Choose the correct answer:

1 7 X (500 + 4) = ...

ⓐ 7 X 54 ⓑ 7 X 504 ⓒ 7 X 5,004 ⓓ 7 X 9

2 (60 X 20) + (60 X 3) + (7 X 20) + (7 X 3) = ...

ⓐ 67 X 23 ⓑ 62 X 73 ⓒ 63 X 27 ⓓ 76 X 32

3 The area model that represents (2 X 500) + (2 X 20) + (2 X 4) is ....

ⓐ 2 × [500 | 20 | 4] ⓑ 2 × [5 | 2 | 4] ⓒ 2 × [50 | 2 | 4] ⓓ 2 × [50 | 20 | 4]

4 The problem that represents the opposite area model is ....

4 × [600 | 9]

ⓐ 4 X (6 + 9) ⓑ 4 X (60 + 9)

ⓒ 4 X (600 + 9) ⓓ 4 X (60 + 90)

5 15 X 56 = 15 X (.......... + ...)

ⓐ 50 + 6 ⓑ 5 + 6 ⓒ 50 + 60 ⓓ 5 + 60

Second: Complete the following:

1 7,480 X 7 = 7 X (.......... + ... + ...) = ...

2 23 X 46 = (20 X ....) + (20 X ....) + (3 X ....) + (3 X ....)

3 .... X .... = (20 X 500) + (20 X 6) + (4 X 500) + (4 X 6)

4 3 X .... = 3 X (6,000 + 200 + 30)

5 2 X 505 = (2 X ....) + (2 X ....)

Third: Multiply using the following partial products models:

1

```
                      89
              X        2
              ----------
( ..... X ..... )    .....
( ..... X ..... )  + .....
              ----------
                     .....
```

2

```
                      45
              X       37
              ----------
( ..... X ..... )    .....
( ..... X ..... )  + .....
( ..... X ..... )  + .....
( ..... X ..... )  + .....
              ----------
                     .....
```

3

```
                     627
              X       43
              ----------
( ..... X ..... )    .....
( ..... X ..... )  + .....
( ..... X ..... )  + .....
( ..... X ..... )  + .....
( ..... X ..... )  + .....
( ..... X ..... )  + .....
              ----------
                     .....
```

Assessment on Concept 1

First: Choose the correct answer:

1. 5 X 1,000 = ...

   ⓐ 50 ⓑ 500 ⓒ 5,000 ⓓ 50,000

2. 25 X 80 = ...

   ⓐ 2 X 10,000 ⓑ 2 X 1,000 ⓒ 2 X 100 ⓓ 2 x 10

3. The area model that represents (9X 200) + (9 X 40) + (9 X 5) is ....

	200	40	5
9			

ⓐ

	2	4	5
9			

ⓑ

	20	4	5
9			

ⓒ

	20	40	5
9			

ⓓ

4. The multiplication problem that the opposite model represents is ....

	60	9
40		
2		

   ⓐ 46 X 29 ⓑ 49 X 62

   ⓒ 42 X 69 ⓓ 26 X 94

5. The multiplication problem that the opposite model represents is ....

3,000	20
600	4

   ⓐ 12 X 32 ⓑ 12 X 302

   ⓒ 102 X 302 ⓓ 102 X 32

Second: Complete the following:

1. 8 X .... = 80,000
2. 1,000 X .... = 7,000
3. .... X .... = (10 X 50) + (10 X 7) + (2 X 50) + (2 X 7)
4. 9 X .... = 9 × (600 + 20 + 3)
5. 7 X 903 = (7 X ....) + (7 X ....)

Third: Solve the following problems using the mentioned strategy:

1. 2 X 47 (Distributive Property)

   ....
   ....
   ....

2. 82 X 15 (Partial Products)

   ....
   ....
   ....

3. 14 X 23 (Area Model)

   ....
   ....
   ....

Fourth: Answer the following:

Omar owns **12** buses to transport tourists, each bus can carry **25** passengers. How many passengers can Omar carry each day if each bus is full?

....

Concept

3.2 | Multiplying 4-Digit Numbers by 2-Digit Numbers

Exercises on Lessons 5 - 7

What Is an Algorithm?, Multiplying Multi-Digit Numbers & Multiplication Problems in the Real World

1 Find the product using the **standard algorithm for multiplication:**

1. 82 X 4 = ...
2. 608 X 9 = ...
3. 264 X 7 = ...
4. 9324 X 8 = ...
5. 39 X 25 = ... + ... = ...
6. 75 X 36 = ... + ... = ...
7. 306 X 18 = ... + ... = ...
8. 617 X 54 = ... + ... = ...
9. 4,107 X 36 = ... + ... = ...
10. 6,073 X 48 = ... + ... = ...
11. 8,347 X 76 = ... + ... = ...
12. 9,678 X 32 = ... + ... = ...

2 Find the product using the area model:

1 9,532 X 12 = ...

	....	....	....	....
....	....	....	....	....
....	....	....	....	....

2 6,324 X 25 = ...

	....	....	....	....
....	....	....	....	....
....	....	....	....	....

3 3,214 X 37 = ...

	....	....	....	....
....	....	....	....	....
....	....	....	....	....

4 6,312 X 72 = ...

	....	....	....	....
....	....	....	....	....
....	....	....	....	....

5 9,231 X 28 = ...

	....	....	....	....
....	....	....	....	....
....	....	....	....	....

6 6,324 X 37 = ...

	....	....	....	....
....	....	....	....	....
....	....	....	....	....

3 Find the product using the partial products model:

1

7,526
X 42

(.............. X ....) ....
(.............. X ....) + ...
(.............. X ....) + ...
(.............. X ....) + ...
(.............. X ....) + ...
(.............. X ....) + ...
(.............. X ....) + ...
(.............. X ....) + ...

....

2

4,231
X 36

(.............. X ....) ....
(.............. X ....) + ...
(.............. X ....) + ...
(.............. X ....) + ...
(.............. X ....) + ...
(.............. X ....) + ...
(.............. X ....) + ...
(.............. X ....) + ...

....

3

$$\begin{array}{r} 5{,}324 \\ \times \quad 27 \\ \hline \end{array}$$

(............ X ....) ....
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...

....

4

$$\begin{array}{r} 3{,}294 \\ \times \quad 53 \\ \hline \end{array}$$

(............ X ....) ....
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...

....

4 Estimate the product of the multiplication, and then find the actual product. Use the strategy you prefer:

1 7,325 X 12

Estimate: ....

Actual product: ....

The strategy used: ....

2 4,537 X 37

Estimate: ....

Actual product: ....

The strategy used: ....

3 2,314 X 14

Estimate: ....

Actual product: ....

The strategy used: ....

4 6,324 X 34

Estimate: ....

Actual product: ....

The strategy used: ....

5 Answer the following:

1 Each river bus can carry 22 passengers at a time.
What is the maximum number of passengers that the river bus can carry during 25 trips?

....

2 A rectangular piece of land has a length of 256 meters, and a width of 62 meters. Find its area.

....

3 Khaled bought 34 meters of cloth, the price of one meter was 9,560 piasters. What is the price of the cloth that Khaled bought?

....

4 A bus is 1,285 centimeters long. How long are 21 buses?

....

5 Marwan bought a car, and agreed with the owner of the car showroom to pay for it in 12 equal installments, the value of each installment is 9,865 pounds. What is the price of the car?

....

6 Mona saves 1,023 pounds every month. What is the total amount that Mona saves in 18 months?

....

7 16 persons participated in an exhibition, and each won 8,234 pounds. How much did they all win?

....

8 A bag of fruit has a mass of 2,445 grams. What is the mass of 45 similar bags?

....

Assessment on Concept 2

First: **Choose the correct answer:**

1 The problem that represents the opposite area model is ....

	5,000	400	3
60			
7			

ⓐ 5,403 X 67 ⓑ 5,043 X 67
ⓒ 5,430 X 67 ⓓ 543 X 67

2 The problem that represents the opposite area model is ....

120,000	2,000	80
9,000	150	6

ⓐ 3,502 X 43 ⓑ 3,052 X 43
ⓒ 3,520 X 43 ⓓ 352 X 43

3 The model that represents 6,350 X 73 is ....

ⓐ

	6,000	300	50
70			
3			

ⓑ

	6,000	300	5
70			
3			

ⓒ

	6,000	30	5
70			
3			

ⓓ

	600	30	5
70			
3			

4 3,006 X 25 = ...

ⓐ 21,042 ⓑ 90,000 ⓒ 7,650 ⓓ 75,150

5 2,300 X 30 = ...

ⓐ 69,000 ⓑ 6,900 ⓒ 60,900 ⓓ 96,000

Second: **Solve the following problems using the mentioned strategy:**

1 5,080 X 23

(Distributive Property)

....
....
....
....

2 9,007 X 64

(Partial Products)

....
....
....
....

3 2,125 X 74

(Area Model)

....
....
....
....

Third: **Answer the following:**

– Huda bought 18 kg of bananas, the price of a kilogram was 15 pounds, and she bought 18 kilograms of mangoes, the price of a kilogram was 25 pounds. What is the total amount that Huda paid?

....

Theme 2

lathematical perations nd Algebraic hinking



Units of the Theme

Unit 4 Division with Whole Numbers

Concept 4.1: Models for Division

Concept 4.2: Dividing by 2-Digit Divisors

Unit 5 Multiplication and Division with Decimals

Concept 5.1: Multiplying Decimals

Concept 5.2: Dividing Decimals



Unit 6 Numerical Expressions and Patterns

Concept 6.1: Evaluating Numerical Expressions

Concept 6.2: Analyzing Numerical Patterns



Concept

Division with Whole Numbers

4.1 | Models for Division

Exercises on Lessons 1 & 2

Understanding Division & Using the Area Model to Divide

1 Answer the following:

1. A teacher has **96** books and wants to distribute them equally among **4** students. How many books will each student get?

   ....

2. Hazem bought **7** books. The price of each book is **23** pounds. What did Hazem pay?

   ....

3. Emad puts **85** cups in boxes, so that each box can accommodate **5** cups. How many boxes are needed for that?

   ....

4. Samah bought **76** sweets and distributed them equally among **6** of her friends. How many pieces will each friend get? Will there be pieces of sweets left with Samah?

   ....

5. Mona saves **35** pounds every month. How much does Mona save in **5** months?

   ....

6 Eman bought 8 books of the same kind for 144 pounds. What is the price of one book?

....

7 A box has 256 balls. How many balls are in eight identical boxes?

....

8 What is the number that if divided by 6, the result is 27?

....

9 What is the number that if divided by 7, the result is 42 and the remainder is 4?

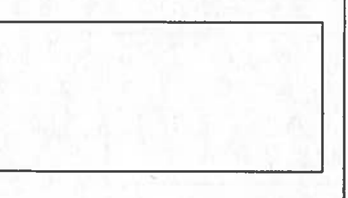
....

10 If the quotient is 5, the divisor is 4 and the remainder is 2, what is the value of the dividend?

....

2 Divide using the **area model**:

1 $96 \div 4 =$ ....

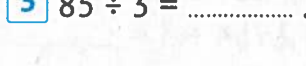


....
....

2 $87 \div 5 =$ ....

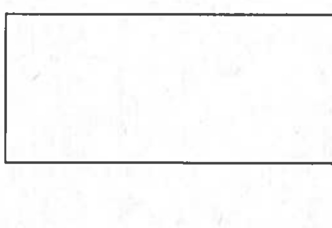
....
....

3 $85 \div 3 =$ ....



....
....

4 $465 \div 5 =$ ....

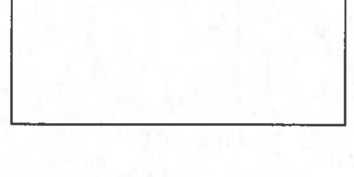


....
....

5 $378 \div 6 =$ ....

....
....

6 $358 \div 4 =$ ....



....
....

7 946 ÷ 2 = ...

8 861 ÷ 7 = ...



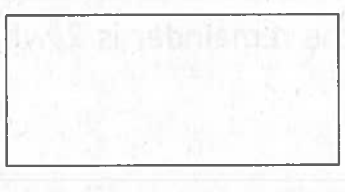
....

....

....

....

9 898 ÷ 8 = ...



10 1,378 ÷ 2 = ...

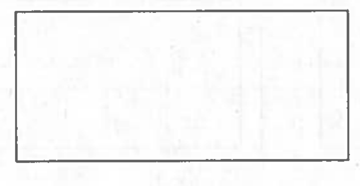
....

....

....

....

11 2,754 ÷ 3 = ...



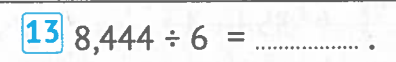
12 3,846 ÷ 5 = ...

....

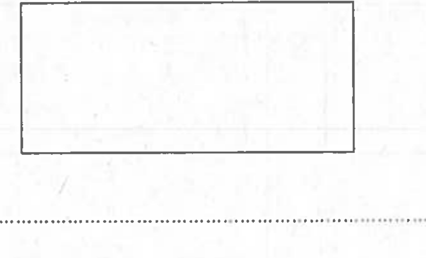
....

....

....



13 8,444 ÷ 6 = ...



14 7,452 ÷ 6 = ...

....

....

....

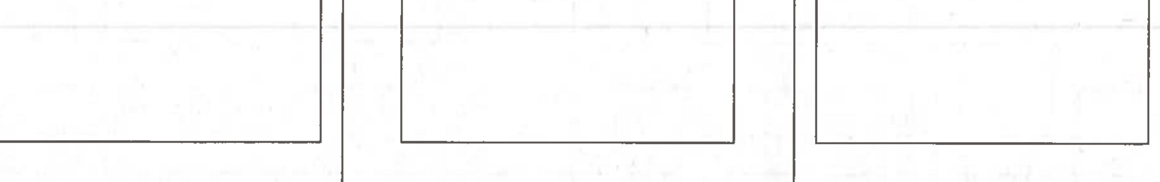
....

3 Divide using the area model:

1 705 ÷ 15 = ...

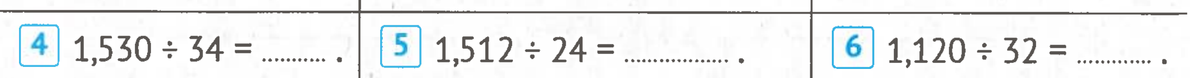
2 882 ÷ 13 = ...

3 714 ÷ 21 = ...



....

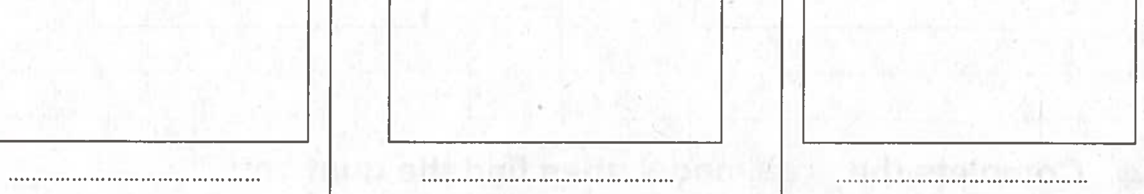
....



4 1,530 ÷ 34 = ...

5 1,512 ÷ 24 = ...

6 1,120 ÷ 32 = ...

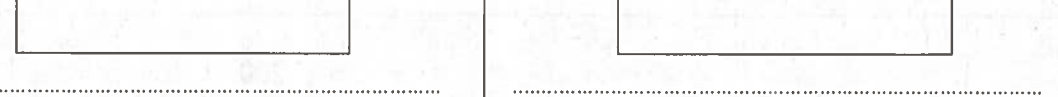


....

....



7 7,584 ÷ 32 = ...

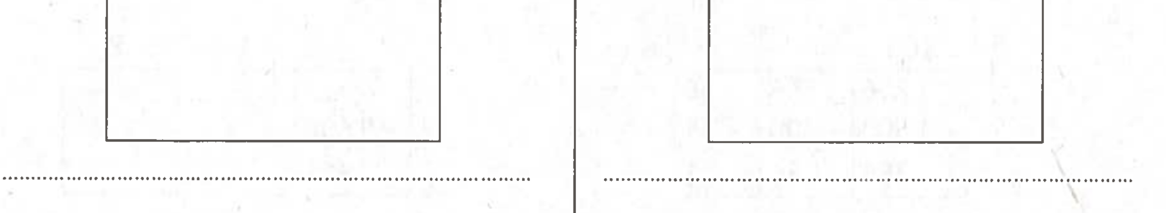


....

....

8 7,175 ÷ 35 = ...

9 16,779 ÷ 47 = ...



....

....

10 32,144 ÷ 82 = ...

....

....

11 23,595 ÷ 39 = ...

....

....

12 67,814 ÷ 41 = ...

....

....

13 64,158 ÷ 52 = ...

....

....

4 Complete the area model, then find the quotient:

1

	20	8
23	552 –	.... – ....

.... ÷ .... = ...

2

	60	3
24	1,522 –	.... – ....

.... ÷ .... = ...

3

	....	....
45	4,635 – 4,500 135	135 – 135 000

.... ÷ .... = ...

4

	200	....	....
32	7,776 –	.... –	.... – ....

.... ÷ .... = ...

5

	100	....	....
....	1,856 – 1,500 356	356 – 300 56	56 – 45 11

.... ÷ .... = ...

6

	....	10	3
32	.... – 9,600 416	.... –	.... – ....

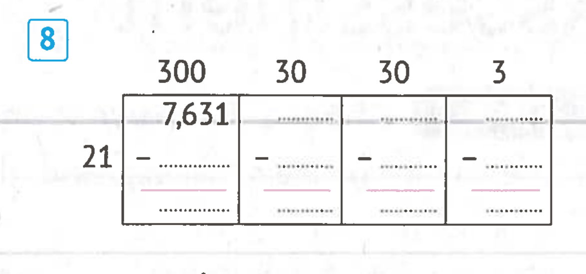
.... ÷ .... = ...

7

	100	100	40	5
35	8,575 –	...... –	...... –	...... – ....

...... ÷ ...... = ...

8



	300	30	30	3
21	7,631 –	...... –	...... –	...... – ....

...... ÷ ...... = ...

5 Complete the area model, then complete the table:

	Area Model	Dividend	Divisor	Quotient	Remainder
1	......	....	...... –	...... –	...... –	...... –	56,160	45	......	......
2	31	200 300 40 2	16,817 –	...... –	...... –	...... –	......	......	......	......
3	24	....	53,328 – 48,000	5,328 – 4,800	528 – 480	48 – 48 00	......	......	......	......
4	......	....	...... –	...... –	...... –	......	72	357	12
5	42	100 100 20 20	...... –	...... –	...... –	...... – 12	......	......	......	......

Assessment on Lessons 1&2

First: Choose the correct answer:

1 The division problem that expresses the opposite model is ....

	200	20	20	5
	1,960	360	200	40
8	– 1,600	– 160	– 160	– 40
	360	200	40	0

ⓐ 1,960 ÷ 8 = 2,225 ⓑ 360 ÷ 8 = 245
ⓒ 1,960 ÷ 8 = 245 ⓓ 1,960 ÷ 8 = 605

2 The divisor in the corresponding model is ....

	10	6
	226	86
14	– 140	– 84
	86	2

ⓐ 14 ⓑ 16
ⓒ 226 ⓓ 2

3 The remainder of the division in the opposite model is ....

	300	20	6
	3,912	312	72
12	– 3,600	– 240	– 72
	312	72	0

ⓐ 12 ⓑ 326
ⓒ 72 ⓓ 0

4 The quotient in the opposite model is ....

	4,000	30	5
	254,205	2,205	315
63	– 252,000	– 1,890	– 315
	220,5	315	0

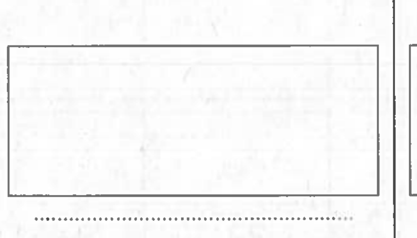
ⓐ 435 ⓑ 4,305
ⓒ 4,350 ⓓ 4,035

5 If 45 x 12 = 540, then the remainder of 545 ÷ 12 is ....

ⓐ 5 ⓑ 12 ⓒ 45 ⓓ 540

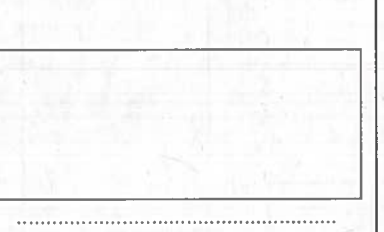
Second: Use the area model to solve the following problems:

1 6,542 ÷ 8



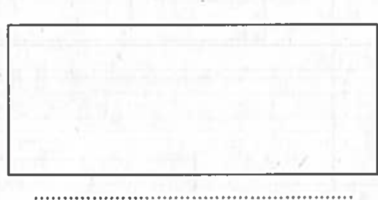
....
....

2 3,634 ÷ 12



....
....

3 144370 ÷ 45



....
....

Third: Answer the following:

1 A red hat costs **400** LE, which is **4** times as much as a blue hat. How much does a blue hat cost? ....

2 There are **138** job applicants for a vacancy. They will need to place the applicants in **6** rooms while they fill out the application. How many people will be in each room? ....

Exercises on Lessons 3 & 4

Using the Partial Quotients Model to Divide & Estimating Quotients

1 Divide using the **partial quotients model**:

1. 52 ÷ 4 = ...
2. 78 ÷ 6 = ...
3. 385 ÷ 5 = ...
4. 288 ÷9 = ...
5. 893 ÷2 = ...
6. 834 ÷ 3 = ...
7. 985 ÷ 7 = ...
8. 992 ÷ 8 = ...
9. 1,446 ÷ 3 = ...
10. 4,985 ÷ 5 = ...
11. 3,654 ÷ 6 = ...

12 1,446 ÷ 3 = ...

13 4,985 ÷ 5 = ...

14 3,654 ÷ 6 = ...

2 Divide using the partial quotients model:

1 276 ÷ 23 = ...

2 378 ÷ 14 = ...

3 988 ÷ 24 = ...

4 2,400 ÷75 = ...

5 2,523 ÷ 45 = ...

6 1,200 ÷ 48 = ...

7 4,935 ÷ 47 = ...

8 14,552 ÷ 68 = ...

9 15,632 ÷ 45 = ...

10 250,692 ÷ 78 = ...

11 86,580 ÷ 36 = ...

12 240,796 ÷ 74 = ...

3 Complete using the partial quotients model, then find the quotient:

1

8) 984
- .... | ....
....
- .... | ....
....
- .... | ....
....

2

........) 8,328
- 8,000 | 1,000
328
- 320 | ....
8
- 8 | ....
0

3

45) 10,530
- .... | 200
....
- .... | 30
....
- .... | 4
....

4

36) ....
- .... | 100
....
- .... | 100
....
- .... | 8
000

5

24) 99,180
- 96,000 | 4,000
3,180
- 2,400 | ....
780
- 720 | ....
60
- 48 | ....
12

6

24) ....
- .... | 1,000
....
- .... | 1,000
....
- .... | 200
....
- .... | 30
000

7

........) ....
- 4,500 | 100
....
- .... | 100
....
- .... | 100
....
- .... | 2
13

8

........) ....
- .... | 500
....
- 320 | 10
....
- .... | 10
....
- .... | 2
000

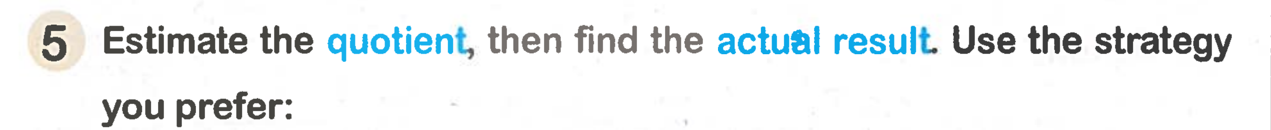
4 Complete using the **partial quotients model**, then complete the table:

1

	a	b	c
Partial Quotients Model	3 ⟌ 2337 –	.... –	.... –	....	42 ⟌ .... –	100 .... –	20 .... –	30 11	.... ⟌ .... –	300 .... –	20 .... – 52	1 00
Dividend	....	....	....
Divisor	....	....	....
Quotient	....	....	....
Remainder	....	....	....

2

	a	b	c
Partial Quotients Model	.... ⟌ 75,257 – 65,000	1,000 .... – 6,500	.... –	50 507 – 455	7	22 ⟌ .... –	1,000 .... –	200 .... –	200 .... –	7 000	.... ⟌ .... – 260	20 .... –	20 .... –	20 .... –	3 0
Dividend	....	....	....
Divisor	....	....	....
Quotient	....	....	....
Remainder	....	....	....



5 Estimate the quotient, then find the actual result. Use the strategy you prefer:

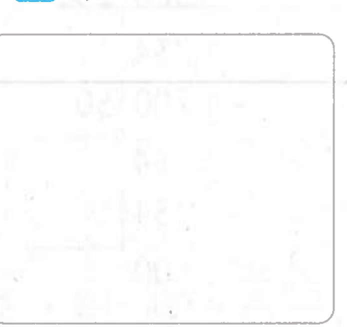


1 3,248 ÷ 8

Estimate = ...

Solution = ...

2 6,884 ÷ 6



Estimate = ...

Solution = ...

3 36,024 ÷ 9

Estimate = ...

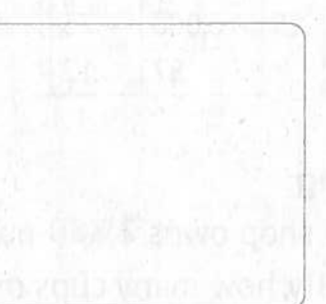
Solution = ...

4 22,425 ÷ 65

Estimate = ...

Solution = ...

5 3,892 ÷ 83



Estimate = ...

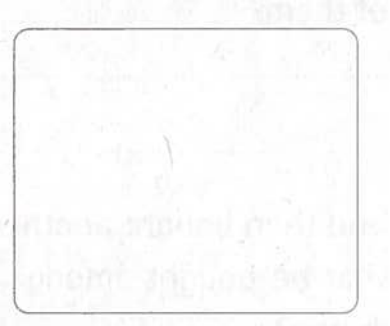
Solution = ...

6 3,511 ÷ 72

Estimate = ...

Solution = ...

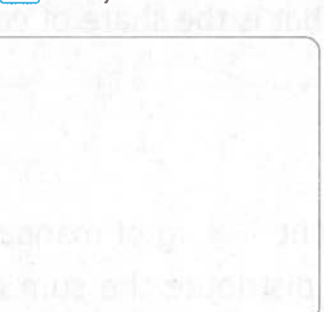
7 9,888 ÷ 24



Estimate = ...

Solution = ...

8 107,310 ÷ 42



Estimate = ...

Solution = ...

9 11,310 ÷ 45

Estimate = ...

Solution = ...

6 Match:

1

```
8 | 3,648
  - 3,200 | 400
      448
  -   400 | 50
       48
  -    48 | 6
       00
```

2

```
34 | 8,534
   - 6,800 | 200
     1,734
   - 1,700 | 50
        34
   -    34 | 1
        00
```

3

```
15 | 6,087
   - 3,000 | 200
     3,087
   - 3,000 | 200
        87
   -    75 | 5
        12
```

a

	200	50	1
	8,534	1,734	34
34	− 6,800	− 1,700	− 34
	1,734	34	00

b

	400	5
	6,087	87
15	− 6,000	− 75
	87	12

c

	200	200	50	6
	3,648	2,048	448	48
8	− 1,600	− 1,600	− 400	− 48
	2,048	448	48	00

7 Answer the following:

1. The owner of a juice shop owns 2,880 paper cups. If he uses them within 12 days equally, how many cups did he use every day?

   ....

   ....

2. An association donated 11,250 pounds and it was distributed equally among 45 persons. What is the share of each of them?

   ....

   ....

3. A fruit merchant bought 349 kg of mangoes, and then bought another 364 kg. He wants to distribute the sum of what he bought among 3 boxes equally. How many kilograms are in each box?

   ....

   ....

Assessment on Lessons 3&4

First: **Choose the correct answer:**

	48	11,232	
	–	9,600	200
		1,632	
	–	1,440	30
		192	
	–	192	4
		0	

1. The quotient in the opposite model is ....
   - ⓐ 11,232
   - ⓑ 48
   - ⓒ 234
   - ⓓ 0

	12	36,514	
	–	36,000	3,000
		514	
	–	480	40
		34	
	–	24	2
		10	

2. The remainder of division in the opposite model is ....
   - ⓐ 36,514
   - ⓑ 12
   - ⓒ 3,042
   - ⓓ 10

	65	8,060	
	–	6,500	100
		1,560	
	–	1,300	20
		260	
	–	260	4
		0	

3. The dividend in the opposite model is ....
   - ⓐ 8,060
   - ⓑ 65
   - ⓒ 124
   - ⓓ 260

4. 800 X 30 = ...

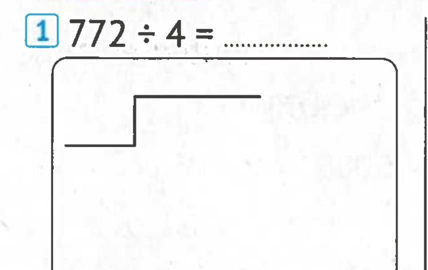
   ⓐ 240,000 ⓑ 24,000 ⓒ 2,400 ⓓ 240

5. 500 X .... = 400,000

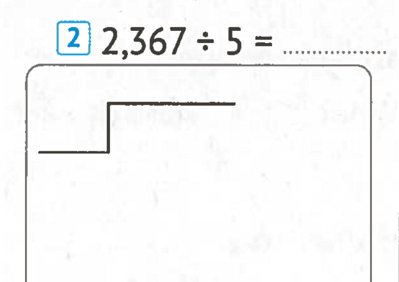
   ⓐ 800 ⓑ 8,000 ⓒ 80,000 ⓓ 800,000

Second: **Divide using the partial quotients model:**

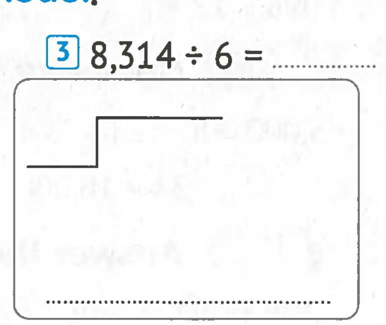
1. 772 ÷ 4 = ...



2. 2,367 ÷ 5 = ...



3. 8,314 ÷ 6 = ...



Third: **Answer the following:**

Adel bought a car for **69,380** pounds and paid **65,940** pounds of its price, then he paid the rest of its price over **four** months equally.

What is the value of the monthly installment?

....

Assessment on Concept 1

First: Choose the correct answer :

	100	20	20	6
24	3,504	1,104	624	144
	− 2,400	− 480	− 480	− 144
	1,104	624	144	0

1 The quotient in the opposite model is ....

ⓐ 1,226 ⓑ 24
ⓒ 3,504 ⓓ 146

23	5,635	
−	4,600	200
	1,035	
−	920	40
	115	
−	115	5
	0	

2 The divisor in the opposite model is ....

ⓐ 5,635
ⓑ 23
ⓒ 245
ⓓ 0

	400	10
15	6,154	154
	− 6,000	− 150
	154	4

3 The remainder of division in the opposite model is ....

ⓐ 15 ⓑ 6,154
ⓒ 410 ⓓ 4

4 If 45 X 24 = 1,080, then 10,800 ÷ 24 = ...

ⓐ 45 ⓑ 24 ⓒ 450 ⓓ 240

5 If 26 X 155 + 20 = 4,050, then the remainder of 4,050 ÷ 26 is ....

ⓐ 20 ⓑ 26 ⓒ 155 ⓓ 4,050

Second: Divide using the strategy you prefer:

1 45,240 ÷ 9 = ...
2 23,154 ÷ 6 = ...
3 3,096 ÷ 12 = ...
4 78,321 ÷ 26 = ...

Third: Complete the following:

1 45,000 ÷ 5 = ...
2 40,000 ÷ .... = 8,000
3 .... ÷ 34 = 10,000
4 .... ÷ 12 = 3,000

Fourth: Answer the following:

1 If the profit of one of the shops is 7,280 pounds, and they will be distributed equally among 5 persons, what is the share of each person?

....

2 If 168 pupils are divided equally into groups of 12 pupils each, how many groups can we get?

....

Concept

4.2 Dividing by 2-Digit Divisors

Exercises on Lessons 5 - 7

Using the Standard Algorithm to Divide, Checking Division with Multiplication & Multistep Story Problems

1 Divide using the standard division algorithm:

1. 75 ÷ 5 = ...
2. 86 ÷ 3 = ...
3. 156 ÷ 6 = ...
4. 834 ÷ 4 = ...
5. 756 ÷ 3 = ...
6. 917 ÷ 7 = ...
7. 1,475 ÷ 5 = ...
8. 3,778 ÷ 8 = ...
9. 4,935 ÷ 7 = ...

10 8,016 ÷ 4 = ...

11 9,177 ÷ 3 = ...

12 42,036 ÷ 6 = ...

2 Divide using the **standard division algorithm**:

1 360 ÷ 15 = ...

2 858 ÷ 78 = ...

3 615 ÷ 41 = ...

4 8,000 ÷ 64 = ...

5 2,870 ÷ 14 = ...

6 4,600 ÷ 37 = ...

7 4,935 ÷ 47 = ...

8 14,552 ÷ 68 = ...

9 15,632 ÷ 45 = ...

10 105,821 ÷ 41 = ...

11 57,564 ÷ 26 = ...

12 56,373 ÷ 23 = ...

3 Complete the **partial quotients model**, then find the quotient:

1
Quotient: ....
5) 489
− ....
....
− ....
....

2
Quotient: 228
8) ....
− 16
....
− 16
....
− 64
5

3
Quotient: 124
........) 3,224
− 2 6
62
− ....
....
− ....
....

4
Quotient: 136
37) ....
− ....
....
− ....
....
− ....
000

5
Quotient: 2566
........) 82,112
− ....
....
− ....
....
− ....
....
− ....
....

6
Quotient: 5602
41) ....
− ....
....
− ....
....
− ....
15

7
Quotient: ....
24) 78,496
− 72
....
− 48
....
− 144
....
− 216
00

8
Quotient: ....
........) 82,112
− 64
181
− 160
211
− 192
....
− ....
000

4 Divide using different division strategies:

	Standard Division Algorithm	Partial Quotients Model	Area Model	Division
1				10,455 ÷ 85 = ...
2				3,213 ÷ 17 = ...
3				50,312 ÷ 38 = ...

5 Complete the following:

1. If 35 X 13 = 455, then 455 ÷ 13 = ...
2. If 6,048 ÷ 24 = 252, then 24 x 252 = ...
3. If 61 X 16 = 976, then 980 ÷ 61 = 16 and the remainder is ....
4. If 2,000 ÷ 54 = 37, and the remainder is 2, then 37 X 54 = ...
5. The number that if divided by 23 has a quotient of 212 is ....
6. The number that if divided by 34 has a quotient of 102, and the remainder is 11 is ....
7. The number that if multiplied by 12 gives the result 1,260 is ....
8. 23 X .... = 2,346
9. 2,553 ÷ .... = 23
10. .... ÷ 14 = 1003

6 Answer the following:

1. A bakery made **140** servings of baklava for a party. If each baking tray holds **12** servings of baklava, how many trays will be needed to hold all the baklava?

   ....

   ....

   ....

2. In one year, a textile factory used **11,650** meters of cotton, **4,950** fewer meters of silk than cotton, and **3,500** fewer meters of wool than silk. How many meters of fabric were used in all?

   ....

   ....

   ....

3 An architect is designing a bridge. The architect has two choices for materials. Mighty Steel sells 50 metric tons (t) of steel for 100,000 LE. Silver Strong Steel sells 30 t of steel for 70,000 LE.

If the architect needs 15 t of steel, how much money will be saved by purchasing from Mighty Steel?

....

....

....

....

4 Zeinab ordered 12 packages of fabric squares to make a quilt. Each package has 18 fabric squares, and Zeinab used all the squares for her quilt. Reem made a quilt that was 13 squares wide by 13 squares long. How many fewer squares did Reem use than Zeinab for her quilt?

....

....

....

....

5 Nagi sold a total of 30 boxes of sports T-shirts at his store on Monday. These boxes contained only basketball T-shirts and football T-shirts. Each box contained 25 sports T-shirts. He earned 3 LE for each sports T-shirt he sold. He earned a total of 1,134 LE from the football T-shirts he sold. How much money did Nagi earn from the basketball T-shirts he sold?

....

....

....

6 Malek and his family are going on a road trip to his grandmother's house, which is 465 kilometers away. On Friday, they traveled 124 km. On Saturday, they traveled 210 km. How many kilometers will they need to travel on Sunday to reach his grandmother's house?

....

....

7 If the total price of 25 books is 1,875 pounds, what is the price of 36 books?

....

....

8 Hussam bought a car and paid 85,500 pounds as a down payment (part of the price), and the rest of the car's price is paid in 24 equal monthly installments. If the total price of the car is 163,500 pounds, what is the value of each installment?

....

....

9 A school has 456 boys and 419 girls. It is intended to divide boys and girls equally into 25 classes in the school. How many students will be in each class?

....

....

10 A rectangular garden with dimensions of 124 meters by 85 meters, divided into rectangular planting basins, each of which is 62 square meters. How many basins are in the garden?

....

....

Assessment on Concept 2

First: **Choose the correct answer:**

1 The quotient in the following division model is ....

```
     0437
12 | 5,248
   -   48
       44
   -   36
       88
   -   84
        4
```

ⓐ 5,248
ⓑ 12
ⓒ 4
ⓓ 437

2 The divisor in the following division model is ....

```
     0181
25 | 4,528
   -   25
      202
   -  200
       28
   -   25
        3
```

ⓐ 4,528
ⓑ 25
ⓒ 3
ⓓ 181

3 The remainder in the following division model is ....

```
     029
32 | 954
   -  64
     314
   - 288
      26
```

ⓐ 954
ⓑ 32
ⓒ 26
ⓓ 29

4 From the following division model, 802 = ...

```
     036
22 | 802
   -  66
     142
   - 132
      10
```

ⓐ 22 X 36 + 10
ⓑ 22 + 36 X 10
ⓒ 22 X 36 X 10
ⓓ 22 + 36 + 10

5 24,000 ÷ 600 = ...

ⓐ 4 ⓑ 40 ⓒ 400 ⓓ 4,000

Second: **Complete the following:**

1 If 4 X 60 = 240, then 400 X 600 = ...

2 450,000 ÷ .... = 900

3 If 24 X 15 = 360, then the remainder of 375 ÷ 15 is ....

4 If 248 ÷ 12 = 20 (R 8), then 12 X 20 + ... = 248.

5 60 X 300 ....

Third: **Answer the following:**

There are **205** people at a concert. After the concert, **40** people left in cars, the rest of them want to go home by a microbus. If the load of each microbus is **11** people, how many microbuses are needed for everyone to get home?

....

Unit 5

Concept

Multiplication and Division with Decimals

5.1 | Multiplying Decimals

Exercises on Lessons 1 & 2

Multiplying by Powers of Ten & Multiplying Decimals by Whole Numbers

1 Find the product of:

1. 12 X 10 = ...
2. 9 X 100 = ...
3. 101 X 1,000 = ...
4. 65 X 0.1 = ...
5. 26 X 0.01 = ...
6. 17 X 0.001 = ...
7. 0.5 X 10 = ...
8. 0.75 X 100 = ...
9. 0.256 X 1,000 = ...
10. 0.2 X 0.1 = ...
11. 0.36 X 0.01 = ...
12. 0.12 X 0.001 = ...
13. 3.25 X 10 = ...
14. 4.12 X 100 = ...
15. 3.19 X 1,000 = ...
16. 42.12 X 0.1 = ...
17. 55.12 X 0.01 = ...
18. 36.01 X 0.001 = ...
19. 0.02 X 10 = ...
20. 0.36 X 100 = ...
21. 0.17 X 1,000 = ...
22. 6.35 X 0.1 = ...
23. 42.14 X 0.01 = ...
24. 3.1 X 0.001 = ...

2 Find the product of:

1. 25 X 0.5 = ...
2. 12 X 0.2 = ...
3. 9 X 1.35 = ...
4. 12 X 0.07 = ...

5 2.6 X 0.6 = ...
6 17 X 0.001 = ...
7 3.33 X 5 = ...
8 9.56 X 9 = ...
9 253 X 0.003 = ...
10 0.008 X 5 = ...
11 4.5 X 0.09 = ...
12 6.35 X 3 = ...
13 2.4 X 12 = ...
14 0.45 X 13 = ...
15 3.7 X 22 = ...
16 27 X 2.1 = ...
17 4.3 X 52 = ...
18 20.5 X 12 = ...
19 12.4 X 11 = ...
20 45 X 2.07 = ...
21 0.365 X 23 = ...
22 0.15 X 124 = ...
23 3.02 X 12 = ...
24 1.12 X 36 = ...

3 Complete the following:

1 .... X 10 = 50
2 .... X 100 = 3,300
3 .... X 1,000 = 20,000
4 .... X 0.1 = 0.7
5 .... X 0.01 = 0.03
6 .... X 0.001 = 0.002
7 .... X 10 = 5
8 .... X 100 = 50
9 .... X 1,000 = 700
10 .... X 0.1 = 0.24
11 .... X 0.01 = 0.024
12 .... X 0.001 = 0.017
13 42 X .... = 420
14 23 X .... = 2,300
15 65 X .... = 56,000
16 14 X .... = 1.4
17 6.3 X .... = 0.063
18 32 X .... = 0.032
19 0.05 X .... = 50
20 63.7 X .... = 6,370
21 2.05 X .... = 20.5
22 0.06 X .... = 0.006
23 3.7 X .... = 3,700
24 20 X .... = 0.02

4 Compare using (<, = or >):

1	25 X 0.1 ____ 0.25 X 10		2	50 X 0.01 ____ 0.5 X 100	
3	73.2 X 0.1 ____ 0.732 X 100		4	36 X 0.1 ____ 3.6 X 10	
5	56 X 11 ____ 5.6 X 11		6	45 X 0.12 ____ 4.5 X 12	
7	1.44 X10 ____ 1.2 X 12		8	75 X 0.01 ____ 0.25 X 3	
9	15 X 0.15 ____ 2.25 X 0.1		10	9 X 0.9 ____ 8.1 X .01	

5 Match:

1. 25 X 10
2. 25 X100
3. 25 X 0.1
4. 25 X 0.01

a. 2.5 X 1,000



b. 2.5 X 0.1



c. 2.5 X 100



d. 0.25 X 10

6 Complete the following:

1. If 6 X 25 = 150, then 6 X 0.25 = ...
2. If 8 X 50 = 400, then 0.8 X 5 = ...
3. If 5 X 24 = 120, then 5 X 2.4 = ...
4. If 1.2 X 25 = 30, then 12 X 0.25 = ...
5. If 0.24 X 5 = 1.2, then 2.4 X 5 = ...
6. When multiplying by 0.01, we move the decimal point .... places to the ....
7. When multiplying by ...., we move the decimal point one place to the right
8. When multiplying by ...., we move the decimal point 3 places to the left.
9. When multiplying 2.45 x 100, the place value of 4 changes from .... to ....

10 1.5 X .... = 30	11 10.5 X .... = 1.05	12 0.25 X .... = 200
13 7.5 X .... = 15	14 11 X .... = 12.1	15 0.31 X .... = 0.93

Assessment on Lessons 1&2

First: **Find the product of:**

1. 8 X 100 = ...
2. 3 X 0.1 = ...
3. 45 X 0.001 = ...
4. 3.5 X 4 = ...
5. 5.25 X 100 = ...

Second: **Compare using (<, = or >):**

1. 5 X0.3 ◯ 0.5 X 3
2. 24 X 0.2 ◯ 8 X 0.06
3. 1.2 X 100 ◯ 0.12 X 10
4. 635 X 0.1 ◯ 6.35 X 100
5. 825 X 0.01 ◯ 8.25 X 10

Third: **Match:**

1. 2.35 X 10	a. 23.5 X 10
2. 2.35 X 0.1	b. 23.5 X 1
3. 2.35 X 100	c. 23.5 X 100
4. 2.35 X 1,000	d. 23.5 X 0.01

Fourth: **Complete the following:**

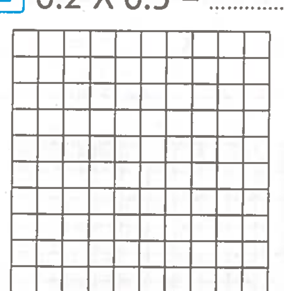
1. If 5 X 24 = 120, then 5 X 2.4 = ...
2. If 0.8 X 421 = 336.8, then 8 X 4.21 = ...
3. When multiplying a whole number by 0.001, we move the decimal point .... places to the ....
4. 0.5 X .... = 0.05
5. .... X 100 = 9.2

Exercises on Lessons 3 - 5

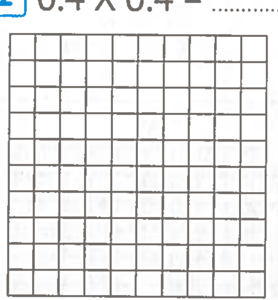
Multiplying Tenths by Tenths, Estimating Decimal Products & Using the Area Model to Multiply Decimals

1 Use the **Base 10** grids to find the product:

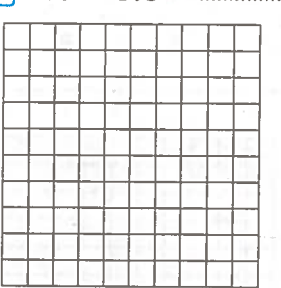
1. 0.2 X 0.3 = ...



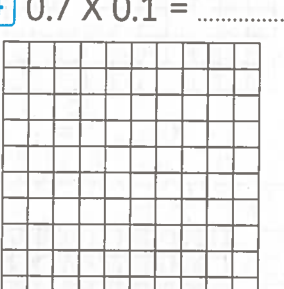
2. 0.4 X 0.4 = ...



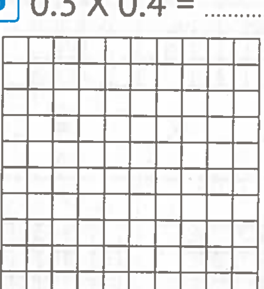
3. 0.6 X 0.8 = ...



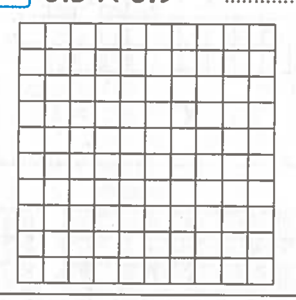
4. 0.7 X 0.1 = ...



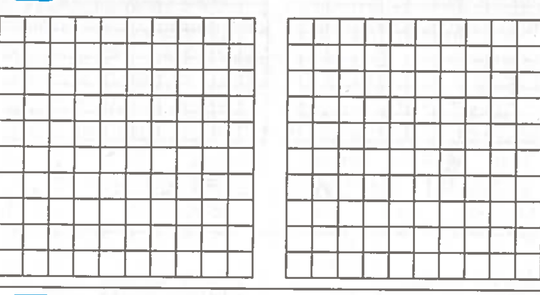
5. 0.3 X 0.4 = ...



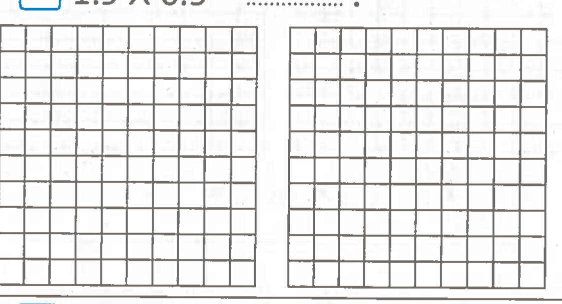
6. 0.5 X 0.9 = ...



7. 1.4 X 0.2 = ...

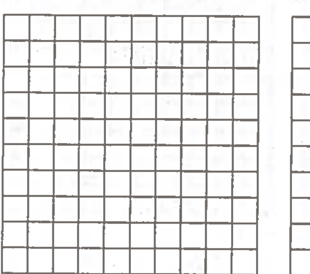


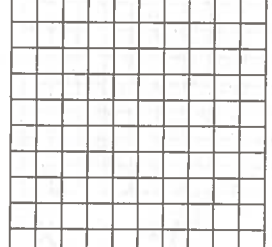
8. 1.5 X 0.3 = ...



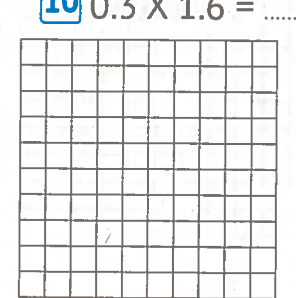


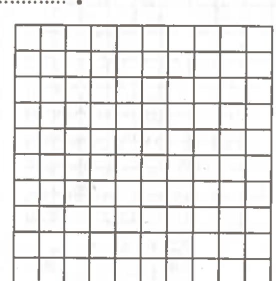
9. 1.1 X 0.7 = ...



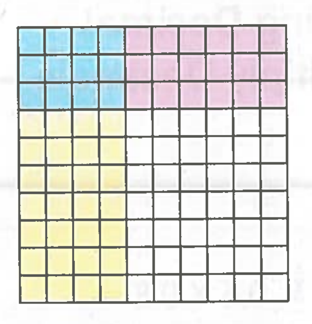


10. 0.3 X 1.6 = ...

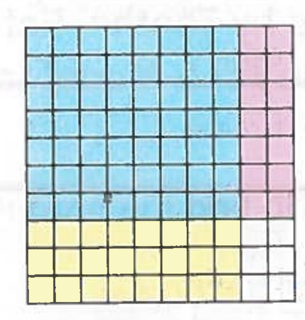




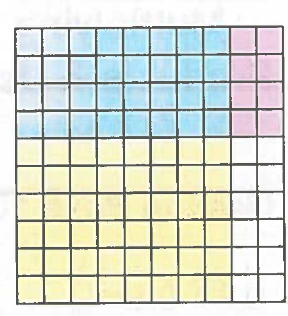
2 Write the multiplication problem represented by each of the following Base 10 grids, then find the result:



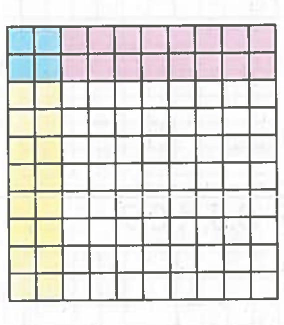

1 .... X .... = ...



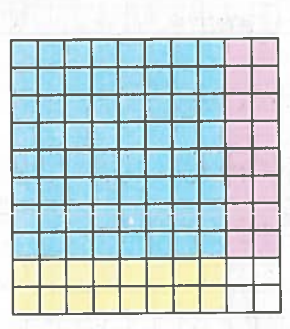
2 .... X .... = ...



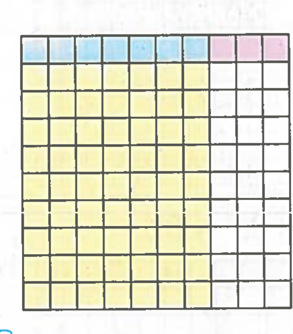
3 .... X .... = ...



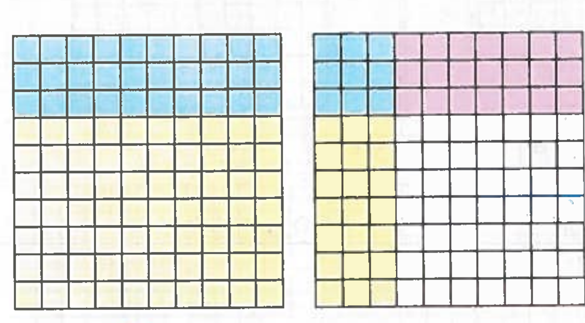
4 .... X .... = ...



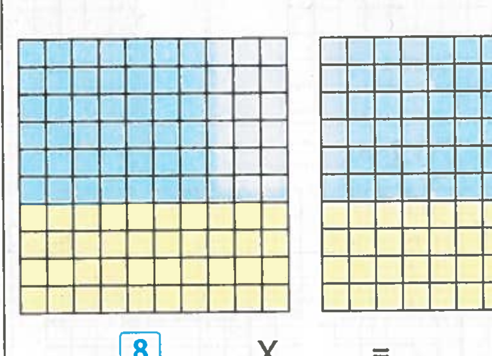
5 .... X .... = ...



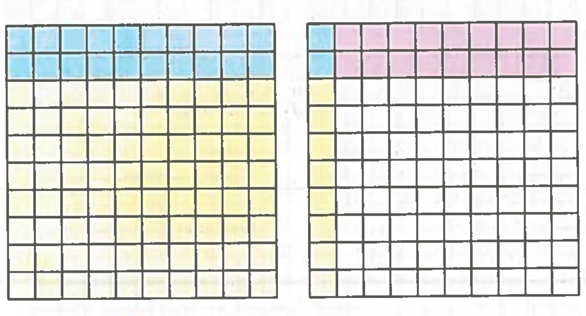
6 .... X .... = ...



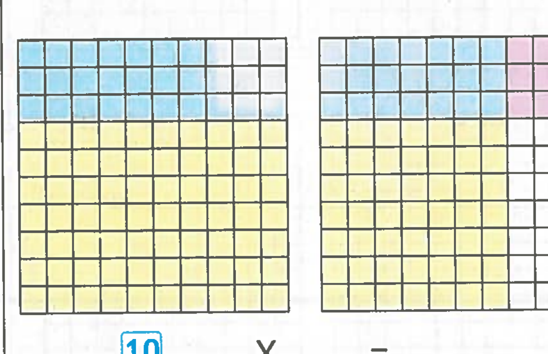
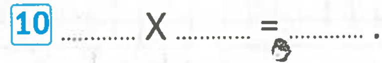

7 .... X .... = ...



8 .... X .... = ...




9 .... X .... = ...

10 .... X .... = ...

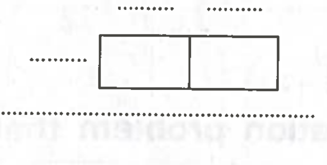
3 Estimate the product of the multiplication. Round to the nearest whole number:

1. 2.5 X 89.7 Estimate: .... X .... = ...
2. 6.45 X 20.45 Estimate: .... X .... = ...
3. 100.2 X 29.7 Estimate: .... X .... = ...
4. 4.28 X 3.68 Estimate: .... X .... = ...
5. 14.8 X 29.7 Estimate: .... X .... = ...
6. 99.7 X 3.7 Estimate .... X .... = ...
7. 0.24 X 243.4 Estimate: .... X .... = ...
8. 6.8 X 63.5 Estimate: .... X .... = ...

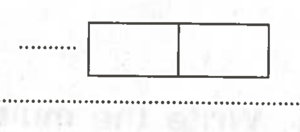
4 Multiply using the area model:

1. 0.9 X 4.2

2. 0.08 X 4.7



3. 6 X 20.3

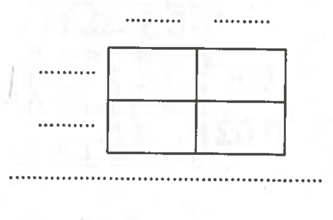


4. 0.9 X 4.2

5. 0.6 X 3.04

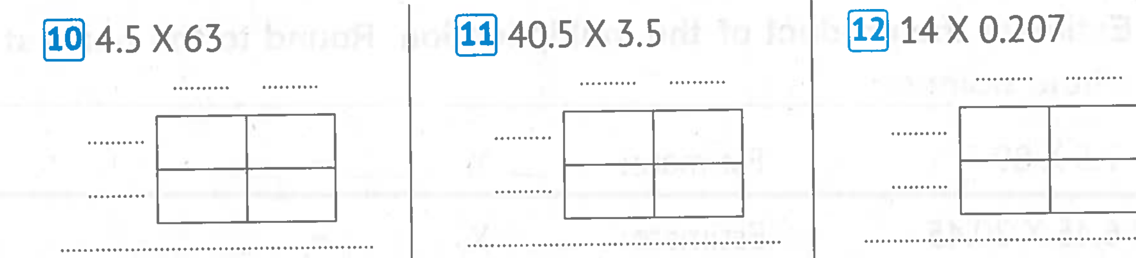
6. 9 X 20.3

7. 0.12 X 4.5

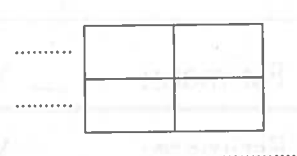


8. 63 X 0.74

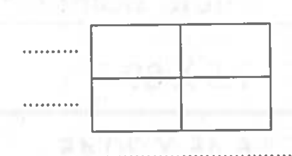
9. 0.24 X 2.7



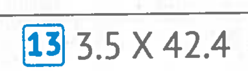

10 4.5 X 63



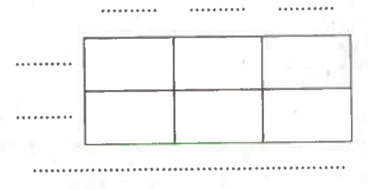
11 40.5 X 3.5



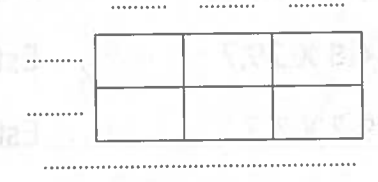
12 14 X 0.207



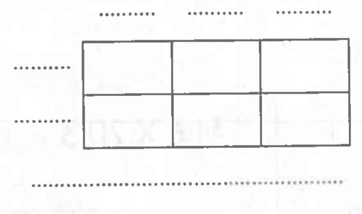
13 3.5 X 42.4



14 3.7 X 30.23



15 0.14 X 17.3



16 3.57 X 1.7

5 **Write the multiplication problem that expresses the following area models, and then solve them:**

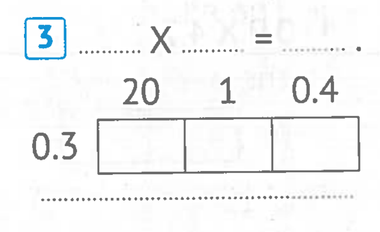
1 .... X .... = ...

	0.5	0.02
0.4		

2 .... X .... = ...

	2	0.3
7		

3 .... X .... = ...



	20	1	0.4
0.3			

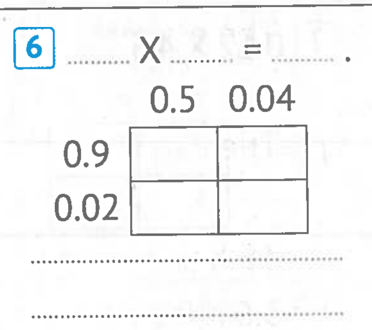
4 .... X .... = ...

	4	0.3
0.2		
0.07		

5 .... X .... = ...

	40	5
3		
0.5		

6 .... X .... = ...



	0.5	0.04
0.9		
0.02		

7 .... X .... = ...

	0.1	0.04	0.002
40			
7			

....

....

8 .... X .... = ...

	3	0.4	0.09
4			
0.7			

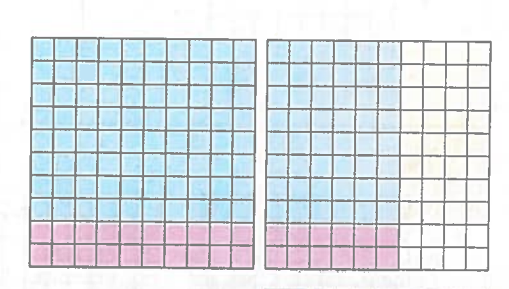
....

....

6 Choose the correct answer:

1 The multiplication problem that represents the opposite model is ....

(16 X 80 or 1.6 X 0.8 or 160 X 80 or 1.6 X 8)



2 The multiplication problem that represents the opposite model is ....

(3 X 9 or 30 X 0.9 or 30 X 90 or 0.3 X 0.9)

3 The multiplication problem that represents the opposite model is ....

	7	0.3	0.02
50			
0.3			

(50.3 X 7.32 or 5.3 X 7.32 or 5.3 X 73.2 or 50.3 X 73.2)

4 The multiplication problem that represents the opposite model is ....

	20	2	0.3
5			
0.07			

(5.7 X 22.3 or 57 X 223 or 5.07 X 202.3 or 5.07 X 22.3)

5 If 12 X 45 = 540, then .... X 0.45 = 540. (1.2 or 0.12 or 120 or 1,200)

6 If 1.3 X 7.2 = 9.36, then 13 X .... = 93.6. (0.72 or 7.2 or 72 or 720)

7 The estimate of 19.7 x 3.27 to the nearest whole number is ....

(60 or 6 or 57 or 65.4)

8 The estimate of 12.2 x 0.578 to the nearest whole number is ....

(0 or 13 or 12 or 6.1)

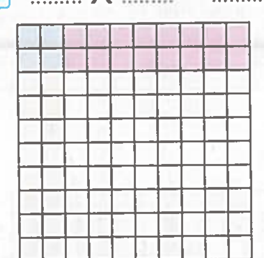
9 35 X 0.2 ◯ 3.5 X 2 (> or = or < or ⩽)

10 3.6 X 0.01 ◯ 36 X 10 (> or = or < or ⩽)

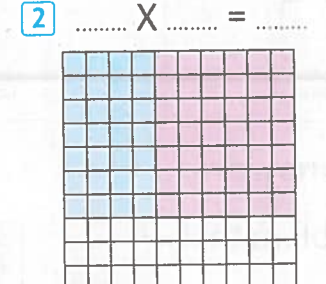
Assessment on Lessons 3-5

First: Write the multiplication problem represented by each of the following Base 10 grids, then find the product:

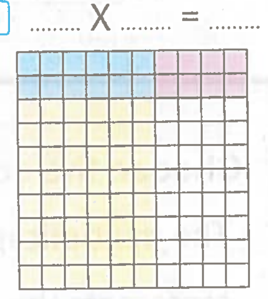
1 .... X .... = ...



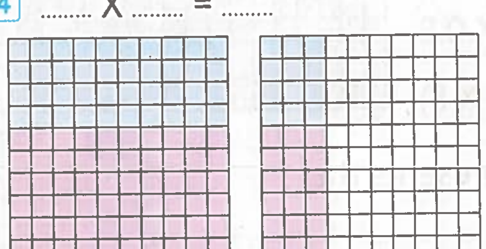
2 .... X .... = ...



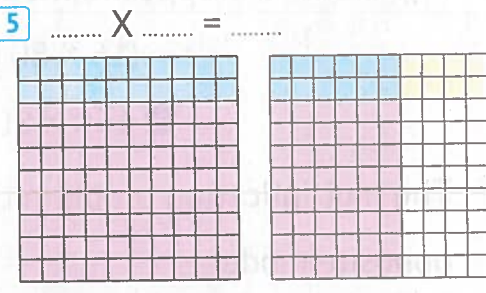
3 .... X .... = ...



4 .... X .... = ...



5 .... X .... = ...



Second: Write the multiplication problems that express the following area models, and then solve them:

	2	0.9
0.7		

1 ....

....

	10	0.08
90		
0.2		

2 ....

....

	800	50	2
0.2			
0.04			

3 ....

....

Third: Complete the following:

1 If 2 X 45 = 90, then .... X 0.45 = 0.09.

2 If 5 X 3 = 15, then 5 X .... = 1.5.

3 85.7 X 9.86 ⟶ Estimate: .... X .... = ... (To the nearest whole number)

4 If 625 X 4 = 2,500, then 6.25 X 0.4 = ...

5 If 2.5X 1.6 = 4, then 25 X 16 = ...

Fourth: Answer the following:

Marwa is a museum curator. She wants to repaint the museum walls, which are measured in meters. There are four walls, each measuring 3.8 m × 15.2 m. Estimate how many square meters she needs to cover with paint. Explain your answer.

....

Exercises on Lessons 6 & 7

Multiplying Decimals through the Hundredths Place & Multiplying Decimals through the Thousandths Place

1 Multiply (35 x 12) using the standard algorithm, then complete:

1. 3.5 X 12 = ...
2. 35 X 0.12 = ...
3. 3.5 X 1.2 = ...
4. 0.35 X 1.2 = ...
5. 3.5 X 0.12 = ...
6. 0.35 X 12 = ...
7. 35 X 1.2 = ...
8. 0.35 X 0.12 = ...

```
   3 5
X  1 2
 ......
+......
 ......
```

2 Multiply (105 X 24) using the standard algorithm, then complete:

1. 105 X 2.4 = ...
2. 1.05 X 24 = ...
3. 105 X 0.24 = ...
4. 0.105 X 24 = ...
5. 105 X 0.024 = ...
6. 10.5 X 2.4 = ...
7. 10.5 X 24 = ...
8. 1.05 X 0.24 = ...

```
  1 0 5
X   2 4
 ......
+......
 ......
```

3 Multiply using the standard algorithm:

```
1)     36      2)  0.368    3)   6.07    4)  115.2
   X  0.7        X     5       X    9       X  0.06
   ......        ......        ......       ......

5)   4.57      6)  3.336    7)  37.07    8)  12.25
   X  5.9        X    21       X   13       X   3.5
   ......        ......        ......       ......
  +......       +......       +......      +......
   ......        ......        ......       ......

9)   6.35     10)  3,021   11)  20.02   12)   3.27
   X  1.7        X 0.032       X  3.6       X    24
   ......        ......        ......       ......
  +......       +......       +......      +......
   ......        ......        ......       ......
```

4 Compare using (<, = or >):

1. 2.8 X 3.4 ____ 0.28 X 34
2. 6.3 X 12 ____ 0.63 X 12
3. 6.4 X 0.37 ____ 64 X 3.7
4. 2.2 X 2.2 ____ 0.22 X 22
5. 4.5 X 0.2 ____ 45 X 20
6. 6.34 X 32 ____ 63.4 X 3.2
7. 0.45 X 0.1 ____ 4.5 X 10
8. 67 X 10.2 ____ 67 X 1.2
9. 0.5 X 0.8 ____ 0.2 X 0.2
10. 3.2 X 3.2 ____ 0.32 X 320

5 Answer the following:

1. Nada bought **26** meters of fabric. If the price of one meter was **43.5** pounds, how many pounds did Nada pay?

   ....

2. Khaled bought **9.5** liters of juice with the price of **12.7** pounds per liter. How many pounds did Khaled pay?

   ....

3. If a pizza costs **22.25** LE, how much does **12** pizzas of the same kind cost?

   ....

   ....

   ....

4. A merchant bought two types of cloth, one at a price of **92.5** pounds per square meter, and the other at a price of **58** pounds per square meter. If he bought **10** meters of the first type and **6.5** meters of the second type, how many pounds did the merchant pay?

   ....

   ....

5. Malik walked **7.9** km on Friday and **3.6** km on Saturday, then Malik repeated that every weekend for **6** weeks. How many total kilometers did Malek walk in **6** weeks?

   ....

   ....

Assessment on Lessons 6&7

First: **Complete the following:**

1. If 25 X 33 = 825, then 0.25 X 3.3 = ...

2. If 137 X 21 = 2,877, then 1.37 X .... = 2.877.

3. 0.02 X 0.03 = ...

4. 0.3 X .... = 0.009

5. 0.2 X 0.3 X 0.5 = ...

Second: **Use the standard algorithm to multiply:**

1.
```
      5.6
  X   2.3
  ---------
  ..........
+ ..........
  ---------
  ........ ≈ ........
```
(To the nearest Tenth)

2.
```
      0.73
  X   2.8
  ---------
  ..........
+ ..........
  ---------
  ........ ≈ ........
```
(To the nearest Hundredth)

3.
```
      2.08
  X   62
  ---------
  ..........
+ ..........
  ---------
  ........ ≈ ........
```
(To the nearest whole number)

Third: **If 452 X 27 = 12,204, then:**

1. 4.52 X 2.7 = ...
2. 0.452 X 27 = ...
3. 45.2 X 27 = ...
4. 4.52 X 2.7 = ...
5. 4.52 X 0.27 = ...
6. 0.452 X 0.27 = ...

Fourth: **Compare using (<, = or >):**

1. 0.8 X 0.3 ◯ 0.8 X 0.03
2. 54 X 1.1 ◯ 0.54 X 11
3. 0.45 X 10 ◯ 45 X 0.1
4. 2.5 X 2.5 ◯ 625 X 0.1

Exercises on Lessons 8-10

Decimals and the Metric System, Measurement, Decimals, and Powers of Ten & Solving Multistep Story Problems

1 Complete:

1. 8,523 ml = ... X .... = ... liters.
2. 954 ml = ... X .... = ... liters.
3. 25 ml = ... X .... = ... liters.
4. 78 liters = ... X .... = ... ml.
5. 2.5 liters = ... X .... = ... ml.
6. 1.24 liters = ... X .... = ... ml.
7. 23 km = ... X .... = ... meters.
8. 0.753 km = ... X .... = ... meters.
9. 235 m = ... X .... = ... km.
10. 3,235 m = ... X .... = ... km.
11. 32 m = ... X .... = ... cm.
12. 3.35 m = ... X .... = ... cm.
13. 0.12 m = ... X .... = ... dm.
14. 45 cm = ... X .... = ... m.
15. 1,247 cm = ... X .... = ... m.
16. 7.5 dm = ... X .... = ... cm.
17. 7.5 kg = ... X .... = ... gm.
18. 85 gm = ... X .... = ... kg.
19. 235 mm = ... X .... = ... cm.
20. 2.8 cm = ... X .... = ... mm.

2 Choose the correct answer:

1. 6.52 kg = ... gm. (65.2 or 652 or 6,520 or 65,200)
2. 549 gm = ... kg. (5,490 or 5.49 or 54.9 or 0.549)
3. 62 ml = ... L. (620 or 6.2 or 0.62 or 0.062)
4. 63.5 liters = ... ml. (635 or 6,350 or 63,500 or 635,000)
5. 45 cm = ... meters. (4,500 or 450 or 4.5 or 0.45)
6. 0.028 meters = ... cm. (0.28 or 2.8 or 28 or 280)
7. 3.2 km = ... m. (32 or 0.32 or 3,200 or 0.032)
8. 45 meters = ... km. (0.045 or 4,500 or 4.5 or 450)
9. 4.5 cm = ... mm. (45 or 0.45 or 450 or 0.045)
10. 256 mm = ... cm. (0.256 or 2.56 or 25.6 or 2,560)

3 Compare using (<, = or >):

1. 45 kg ◯ 4,500 gm
2. 3.25 cm ◯ 32.5 mm
3. 2.5 meters ◯ 2,500 cm
4. 63 liters ◯ 0.063 ml
5. 5,000 m ◯ 0.5 km
6. 0.02 km ◯ 2,000 mm
7. 11.5 L ◯ 15.1 L
8. 50 cm ◯ 5 mm
9. 600 m ◯ 6 km
10. 0.025 kg ◯ 2.5 gm

4 Put (✓) in front of the correct statement, and (✗) in front of the wrong statement:

1. 78 kg = 7,800 g ( )
2. 3.5 m = 350 cm ( )
3. 200 ml = 0.2 liters ( )
4. 63 km = 0.063 gm ( )
5. 12.5 meters = 1.25 dm ( )
6. 1 cm = 0.1 mm ( )

7 1 cm = 0.01 meters ( )

8 25 ml = 0.025 liters ( )

9 10.2 mm = 1.02 cm ( )

10 45.3 L = 0.453 ml ( )

5 Answer the following:

1 Eman wants to know how much her height increased.

In January, she was 1.34 m tall, and at the end of the year she was 145 cm tall. How many centimeters did Eman increase in height?

....

2 Hazem bought 7 books, the price of one book is 23.5 pounds. Find what Hazem paid.

....

....

3 A fruit merchant has 5 boxes of mangoes, each weighing 9.5 kg and 3 boxes of peaches, each weighing 4,600 grams.

What is the total weights of the fruits that the trader has?

....

....

....

4 If Mazen is 1.64 meters tall and Maryam is 145 centimeters tall.

Find the sum of their heights and the difference between them in cm.

....

....

5 Sami drinks 4 liters of water daily. If he drinks 1.25 liters of water in the morning, and 2,450 milliliters of water in the afternoon, how many liters of water will he drink in the evening?

....

....

Assessment on Lessons 8-10

First: **Choose the correct answer:**

1. 78.5 m = ... cm.
   - a) 785
   - b) 7.85
   - c) 7,850
   - d) 0.785
2. .... kg = 460 gm.
   - a) 0.46
   - b) 460,000
   - c) 4.60
   - d) 4,600
3. 5.2 L = ... mL.
   - a) 0.052
   - b) 0.52
   - c) 52
   - d) 5,200
4. 2.56 X .... = 25.6
   - a) 10
   - b) 100
   - c) 0.1
   - d) 0.01
5. 0.01 X .... = 0.025
   - a) 0.25
   - b) 2.5
   - c) 25
   - d) 250

Second: **Complete the following:**

1. 456 cm = ... X .... = ... m.
2. 5.9 kg = ... X .... = ... gm.
3. 96 mL = ... X .... = ... L.
4. 4,258 cm = ... X .... = ... m.
5. .... X 85 = 0.085

Third: **Compare using (<, = or >):**

1. 45 kg ( ) 4,500 gm
2. 5.02 L ( ) 5,020 mL
3. 75 dm ( ) 750 m
4. 25 X 0.01 ( ) 0.25 X 100

Fourth: **Answer the following:**

Ali's cat weighs **7** kilograms and his dog weighs **17** kilograms. When Ali took them to the vet, he knew that his cat had gained **0.45** kilograms and his dog had gained **0.12** kilograms. What is the total weight of the two pets now?

....

....

....

Assessment on Concept 1

First: Choose the correct answer:

1. The multiplication problem that expresses the corresponding model is ....

   ⓐ 0.12 X 0.35   ⓑ 1.2 X 3.5
   ⓒ 0.3 X 0.5   ⓓ 30 X 50

2. The area model that expresses 2.5 X 0.34 is ....



ⓐ	20	5
30		
5		

ⓑ	2	0.5
0.3		
0.05		

ⓒ	20	0.5
3		
0.5		

ⓓ	2	0.5
0.3		
0.5		

3. If 25 X 16 = 400, then 2.5 X 1.6 = ...

   ⓐ 0.04   ⓑ 0.4   ⓒ 4   ⓓ 40

4. 0.48 liter = ... milliliter.

   ⓐ 0.048   ⓑ 4.8   ⓒ 48   ⓓ 480

5. (3 Tenths) X (8 Hundredths) = ...

   ⓐ 0.024   ⓑ 0.24   ⓒ 24   ⓓ 240

Second: Complete the following:

1. 86 X .... = 0.086
2. If 24 X 12 = 288, then 2.4 X 0.012 = ...
3. 25.7 X 9.8 → Estimate .... X .... = ...(To the nearest whole number)
4. 4,258 gm = ...X .... = ... kg.
5. 0.7 X 0.8 X 0.5 = ...

Third: Compare using (<, = or >):

1. 0.2 X 0.01 ⬭ 0.4 X 0.05
2. 6.2 X 100 ⬭ 0.062 X 10
3. 75 cm ⬭ 750 ml
4. 1.2 X 3.5 ⬭ 0.12 X 350

Fourth: Answer the following:

1. The length of the route taken by the river bus is 58.7 km. How many kilometers would the river bus travel if it traveled this route 9 times a day?

   ....

2. Souad bought 20 meters of fabric. If the price of one meter is 65.5 pounds, what is the price of the whole fabric?

   ....

Concept

5.2 | Dividing Decimals

Exercises on Lessons 11-13

Dividing by Powers of Ten, Patterns and Relationships in Powers of Ten & Modeling Decimal Division

1 Divide:

1. 17 ÷ 10 = ...
2. 8 ÷ 100 = ...
3. 102 ÷ 1,000 = ...
4. 45 ÷ 0.1 = ...
5. 23 ÷ 0.01 = ...
6. 45 ÷ 0.001 = ...
7. 0.6 ÷ 10 = ...
8. 0.12 ÷ 100 = ...
9. 125 ÷ 1,000 = ...
10. 0.9 ÷ 0.1 = ...
11. 0.27 ÷ 0.01 = ...
12. 0.42 ÷ 0.001 = ...
13. 4.24 ÷ 10 = ...
14. 8.13 ÷ 100 = ...
15. 4.17 ÷ 10 = ...
16. 61.75 ÷ 0.1 = ...
17. 45.72 ÷ 0.01 = ...
18. 27.04 ÷ 0.001 = ...
19. 0.07 ÷ 10 = ...
20. 0.96 ÷ 100 = ...
21. 34 ÷ 1,000 = ...
22. 5.63 ÷ 0.1 = ...
23. 63.75 ÷ 0.01 = ...
24. 4.2 ÷ 0.001 = ...
25. 6.35 X 0.1 = ...
26. 42.14 X 0.01 = ...
27. 31 X 0.001 = ...

2 Complete the following:

1. .... ÷ 10 = 0.8
2. .... ÷ 100 = 6.32
3. .... ÷ 1,000 = 20
4. .... ÷ 0.1 = 60
5. .... ÷ 0.01 = 400
6. .... ÷ 0.001 = 300

7 .... ÷ 10 = 0.3

8 .... ÷ 100 = 0.07

9 .... ÷ 1,000 = 0.009

10 .... ÷ 0.1 = 2.4

11 .... ÷ 0.01 = 2.5

12 .... ÷ 0.001 = 960

13 0.25 ÷ .... = 25

14 0.58 ÷ .... = 58

15 75 ÷ .... = 75,000

16 23 ÷ .... = 2.3

17 7.5 ÷ .... = 0.075

18 37 ÷ .... = 0.037

19 0.07 ÷ .... = 70

20 45.2 ÷ .... = 4,520

21 3.06 ÷ .... = 30.6

22 0.03 ÷ .... = 0.003

23 3.9 ÷ .... = 3,900

24 50 ÷ .... = 0.05

3 Complete the following patterns:

1 12.5 ÷ .... = 12.5 X .... = 125

2 600 ÷ .... = 600 X .... = 0.6

3 225 ÷ .... = 225 X .... = 22.5

4 225 ÷ .... = 225 X .... = 2.25

5 3.01 ÷ .... = 3.01 X .... = 301

6 1 ÷ .... = 1 X .... = 0.1

7 6 ÷ .... = 6 X .... = 0.06

8 0.02 ÷ .... = 0.02 X .... = 0.2

9 0.05 ÷ .... = 0.05 X .... = 50

10 0.005 ÷ .... = 0.005 X .... = 5

11 12 ÷ .... = 12 X .... = 0.012

12 32 ÷ .... = 32 X .... = 32,000

4 Match:

1 18 X 0.1

2 18 X 0.01

3 18 X 0.001

4 18 X 10

5 18 X 100

a 18 ÷ 1,000

b 18 ÷ 10

c 18 ÷ 100

d 18 ÷ 0.01

e 18 ÷ 0.1

5 Compare using (<, = or >):

1. 2.5 X 10 ⬭ 25 ÷ 0.01
2. 0.1 X 100 ⬭ 10 ÷ 100
3. 30 X 100 ⬭ 3 ÷ 0.001
4. 125 ÷ 10 ⬭ 12.5 X 10
5. 15 X 0.01 ⬭ 1.5 ÷ 10
6. 721 X 0.1 ⬭ 721 ÷ 10
7. 18.8 ÷ 10 ⬭ 188 ÷ 0.1
8. 225 X 0.1 ⬭ 0.225 ÷ 0.1
9. 20.02 ÷ 10 ⬭ 2.2 ÷ 10
10. 20 X 0.5 ⬭ 1 ÷ 0.1

6 Complete each conversion. Then, write a multiplication equation and a division equation with the same answer:

1. 65 kg = ... gm.
   65 X .... = ...
   65 ÷ .... = ...

2. 2.5 m = ... cm.
   2.5 X .... = ...
   2.5 ÷ .... = ...

3. 5 liters = ... ml.
   5 X .... = ...
   5 ÷ .... = ...

4. 923 meters = ... km.
   923 X .... = ...
   923 ÷ .... = ...

5. 23 km = ... m.
   23 X .... = ...
   23 ÷ .... = ...

6. 25 mm = ... cm.
   25 X .... = ...
   25 ÷ .... = ...

7. 225 ml = ... liter.
   225 X .... = ...
   225 ÷ .... = ...

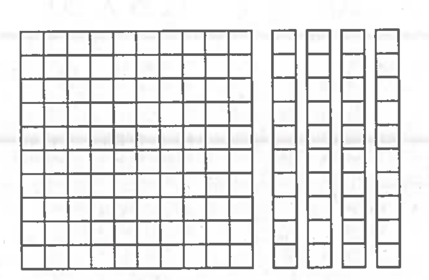
8. 200 gm = ... kg.
   200 X .... = ...
   200 ÷ .... = ...

9. 2.5 cm = ... mm.
   2.5 X .... = ...
   2.5 ÷ .... = ...

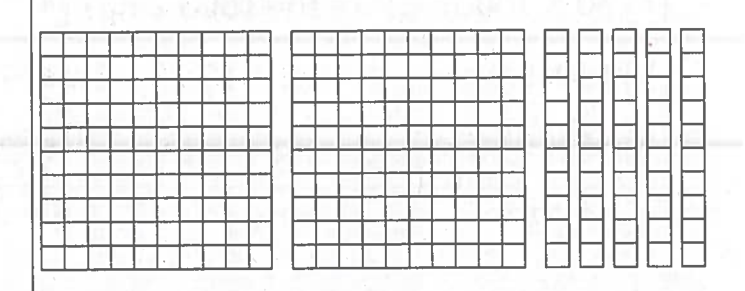
10. 42 dm = ... cm.
    42 X .... = ...
    42 ÷ .... = ...

7 Use the Base 10 blocks to model the following problems:

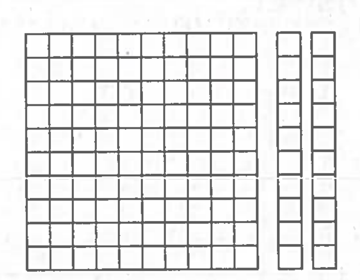
1 $1.4 \div 0.7 =$ ....



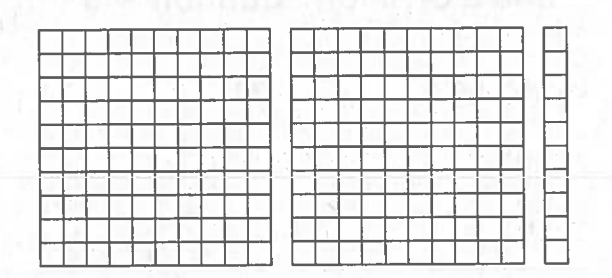
2 $2.5 \div 0.5 =$ ....



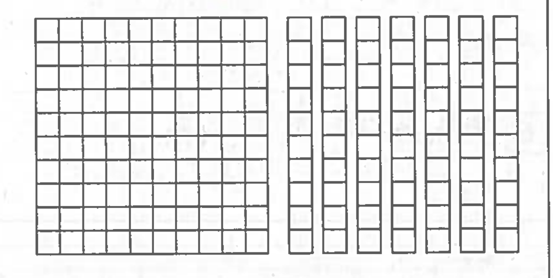
3 $1.2 \div 0.6 =$ ....



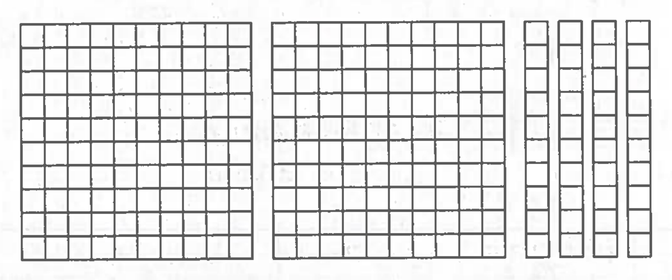
4 $2.1 \div 0.7 =$ ....



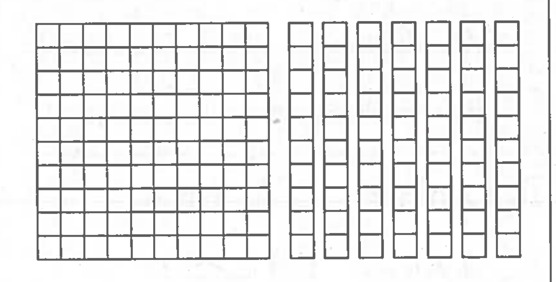
5 $1.8 \div 0.9 =$ ....



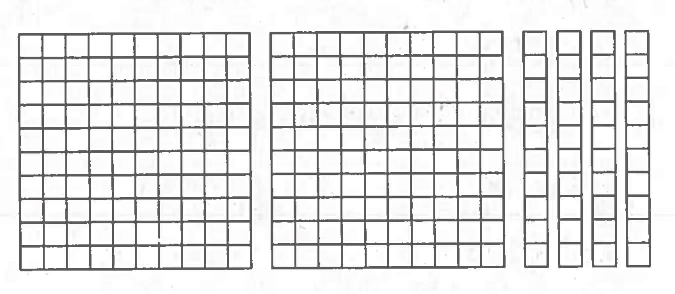
6 $2.4 \div 0.8 =$ ....



7 $1.8 \div 0.45 =$ ....



8 $2.4 \div 0.6 =$ ....



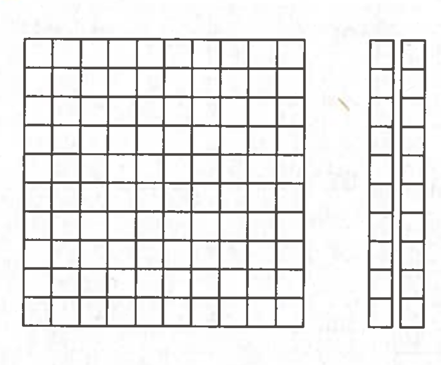
Assessment on Lessons 11-13

First: **Complete the following:**

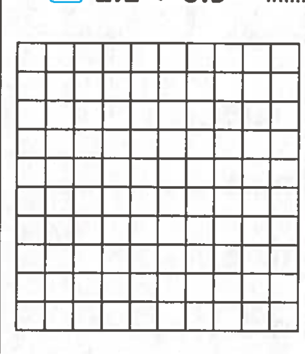
1. 45 X 0.01 = ...
2. 25 ÷ 1,000 = ...
3. 12.5 X 100 = ...
4. 5.74 ÷ 0.1 = ...
5. .... X 10 = 5.6
6. .... ÷ 100 = 0.2
7. 7.8 X .... = 0.78
8. 85.9 ÷ .... = 8,590
9. 78.5 X 0.1 = ... ÷ 100
10. 5.6 X .... = 56 ÷ 0.01

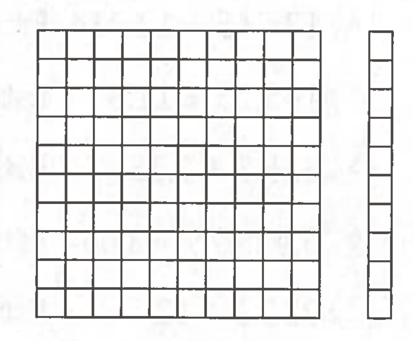
Second: **Use the Base 10 blocks to model the problems and divide:**

1. 1.2 ÷ 0.15 = ...



2. 2.1 ÷ 0.3 = ...





Third: **Complete each conversion. Then, write a multiplication equation and a division equation with the same answer:**

1. 137 cm = ... m.
   137 X .... = ...
   137 ÷ .... = ...

2. 86 kg = ... kg.
   86 X .... = ...
   86 ÷ .... = ...

3. 8,102 ml = ... l.
   8,102 X .... = ...
   8,102 ÷ .... = ...

Fourth: **Compare using (<, = or >):**

1. 856 ÷ 100 ( ) 856 X 0.01
2. 5.64 X 100 ( ) 5.64 ÷ 0.001
3. 200 ÷ 1,000 ( ) 200 X 0.01
4. 12 X 0.01 ( ) 12 ÷ 0.01

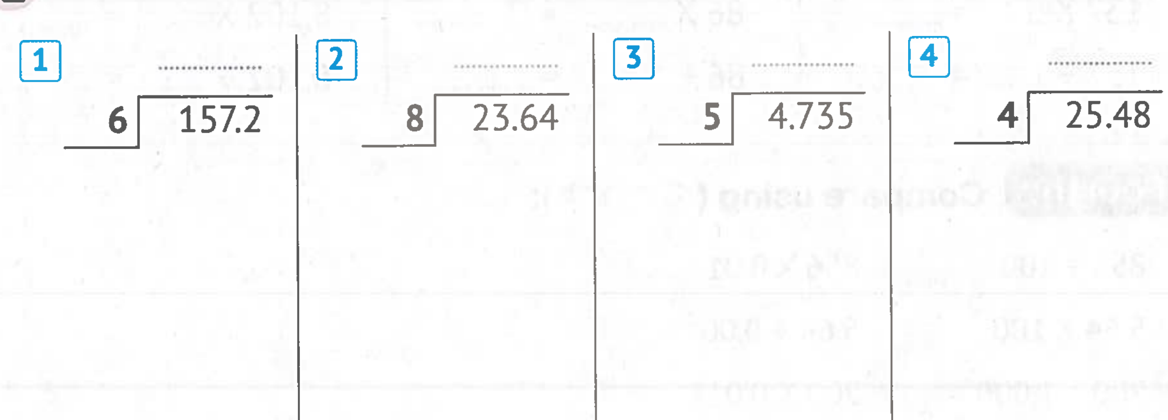
Exercises on Lessons 14-17

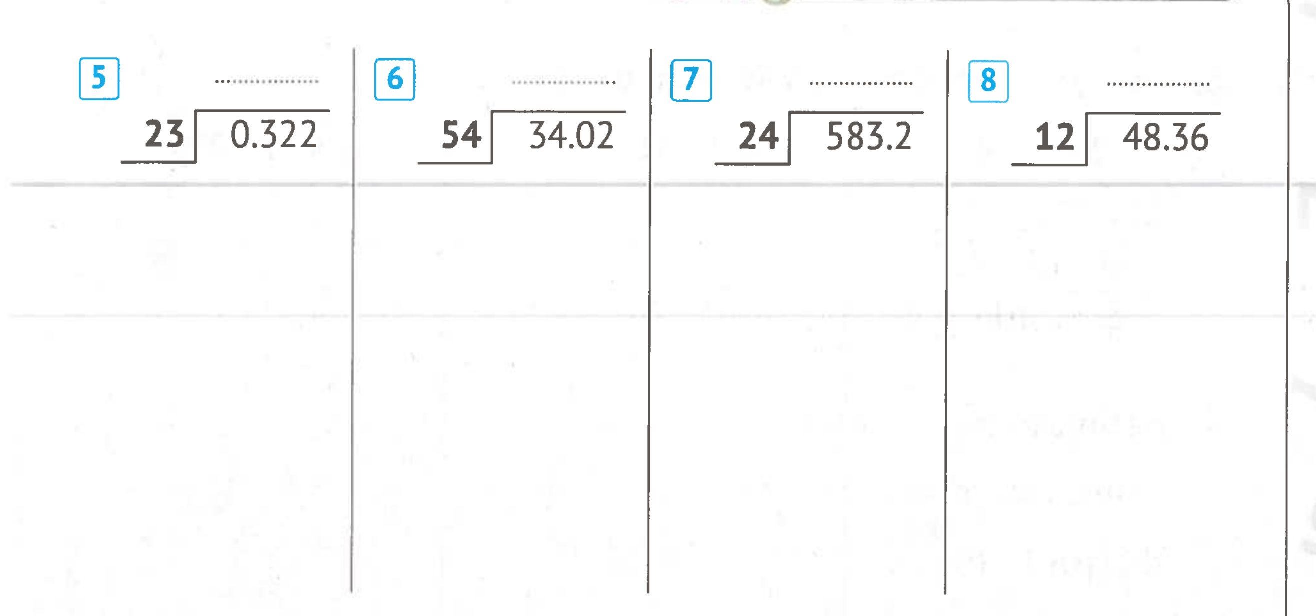
Estimating Decimal Quotients, Dividing Decimals by Whole Numbers, Dividing Decimals by Decimals & Solving Challenging Multistep Story Problems

1 Estimate the decimal quotients in each of the following:
(round the dividend to the nearest whole number and the divisor to the nearest compatible whole number)

1. 56.7 ÷ 8.7 Estimate: .... ÷ .... = ... or .... ÷ .... = ...
2. 36.25 ÷ 5.12 Estimate: .... ÷ .... = ... or .... ÷ .... = ...
3. 124.45 ÷ 12.214 Estimate: .... ÷ .... = ... or .... ÷ .... = ...
4. 145.25 ÷ 12.8 Estimate: .... ÷ .... = ... or .... ÷ .... = ...
5. 325.8 ÷ 8.25 Estimate: .... ÷ .... = ... or .... ÷ .... = ...
6. 3,425.75 ÷ 8.65 Estimate: .... ÷ .... = ... or .... ÷ .... = ...
7. 225.3 ÷ 12 Estimate: .... ÷ .... = ... or .... ÷ .... = ...
8. 128.36 ÷ 10 Estimate: .... ÷ .... = ... or .... ÷ .... = ...
9. 36.25 ÷ 14.9 Estimate: .... ÷ .... = ... or .... ÷ .... = ...

2 Use the standard algorithm to divide:





3 Use the **standard algorithm** to divide:

1. 8 ⟌ 2.8 ....
2. 2 ⟌ 5.23 ....
3. 4 ⟌ 3.22 ....
4. 5 ⟌ 25.2 ....
5. 16 ⟌ 24 ....
6. 25 ⟌ 28.5 ....
7. 4 ⟌ 25 ....
8. 6 ⟌ 3.15 ....

4 Use the standard algorithm to divide:

1. 45.24 ÷ 0.4 = ...

2. 36.7 ÷ 0.05 = ...

3. 1.242 ÷ 0.006 = ...

4. 1.536 ÷ 0.6 = ...

5. 245 ÷ 0.7 = ...

6. 934 ÷ 0.8 = ...

7. 65.65 ÷ 0.13 = ...

8. 1.44 ÷ 1.2 = ...

9. 45.6 ÷ 0.15 = ...

10 24.7 ÷ 2.5 = ...

11 14.297 ÷ 1.7 = ...

12 30.8 ÷ 2.8 = ...

5 If 53 x 31 = 1,643, then:

1 16.43 ÷ 31 = ...

2 1.643 ÷ 0.53 = ...

3 1,643 ÷ 3.1 = ...

4 164.3 ÷ 0.53 = ...

5 164.3 ÷ 3.1 = ...

6 16.43 ÷ 5.3 = ...

7 1.643 ÷ 0.31 = ...

8 1643 ÷ 5.3 = ...

9 3.1 X 5.3 = ...

10 31 X 0.53 = ...

11 31 X 5.3 = ...

12 0.31 X 5.3 = ...

13 3.1 X 53 = ...

14 3.1 X 0.53 = ...

15 0.31 X 53 = ...

16 31 X 53 = ...

6 Compare using (<, = or >):

1 2.5 ÷ 0.5 ◯ 25 ÷ 5

2 0.45 ÷ 9 ◯ 45 ÷ 0.9

3 30 ÷ 1.5 ◯ 3 ÷ 15

4 3.6 ÷ 1.2 ◯ 0.36 ÷ 0.12

5 48 ÷ 0.8 ◯ 4.8 ÷ 8

6 6.3 ÷ 0.9 ◯ 63 ÷ 0.9

7 1.44 ÷ 12 ◯ 14.4 ÷ 0.12

8 225 ÷ 25 ◯ 0.225 ÷ 0.25

9 2.7 ÷ 9 ◯ 0.27 ÷ 9

10 5 ÷ 0.8 ◯ 50 ÷ 8

7 Answer the following:

1. Rashida saved 350 pounds to buy a toy car. She was saving 12.5 pounds for every day she did some simple work. How many days did she have to work to save enough cash to buy the toy?

   ....

2. A father divided the sum of 99 pounds equally among his five children. How many pounds does each son take?

   ....

3. Mona bought 9 meters of fabric, and paid 214.2 pounds. What is the price of one meter of fabric?

   ....

4. If the profits of a shop are 728 pounds, and these profits are to be distributed equally among 5 persons, what is the share of one person?

   ....

5. A car consumed 210 liters of gasoline in 4 months. What is the average gasoline that the car consumed in one month?

   ....

6. Bilal buys 6 bags of fruits, each bag contains 4.25 kg. He wants to give some fruits to two of his friends. What is the weight of the fruits that each friend takes?

   ....

   ....

7. Maha walked 3,000 meters every day for two weeks, the following week she walked 14 kilometers.
   How many kilometers did she walk during those three weeks?

   ....

   ....

   ....

8. Sarah bought 20 kilograms of sugar. If she uses 4.5 kilograms to make the drinks and distributes the rest among 5 bags equally, how many kilograms of sugar are in each bag?

   ....

   ....

Assessment on Lessons 14–17

First: Use the **standard algorithm** to divide:

1. 17.4 ÷ 0.6 = ...
2. 93.1 ÷ 0.7 = ...
3. 8 ÷ 0.32 = ...

Second: If **434 X 12 = 5,208**, then:

1. 520.8 ÷ 0.12 = ...
2. 52.08 ÷ 0.12 = ...
3. 5.208 ÷ 0.12 = ...
4. 5,208 ÷ 0.12 = ...
5. 52.08 ÷ 12 = ...
6. 520.8 ÷ 43.4 = ...
7. 52.08 ÷ 43.4 = ...
8. 5.208 ÷ 0.434 = ...
9. 5,208 ÷ 43.4 = ...
10. 5.208 ÷ 434 = ...

Third: Match:

1. 12.25 ÷ 2.5
2. 122.5 ÷ 2.5
3. 1.225 ÷ 2.5
4. 1,225 ÷ 2.5
5. 12,250 ÷ 2.5

a. 12.25 ÷ 0.25
b. 1.225 ÷ 0.25
c. 1,225 ÷ 0.25
d. 12.25 ÷ 25
e. 12,250 ÷ 25

Fourth: Answer the following:

The mass of a package of cake is **0.08** kilogram heavier than the mass of a package of cookies. The mass of **6** packages of cake is the same as the mass of **9** packages of cookies. Label your answers.

What is the mass of a **single** package of cookies?

What is the mass of a **single** package of cake?

....

....

....

Assessment on Concept 2

First: Choose the correct answer:

1. .... liter = 45 milliliters.
   ⓐ 0.045 ⓑ 45,000 ⓒ 0.45 ⓓ 4.500
2. 3 Tenths ÷ 5 Hundredths = ...
   ⓐ 15 ⓑ 6 ⓒ 0.015 ⓓ 0.06
3. 24.7 ÷ .... = 0.247
   ⓐ 0.01 ⓑ 0.1 ⓒ 10 ⓓ 100
4. 9.6 ÷ 0.1 = ...
   ⓐ 9.6 X 0.1 ⓑ 96 X 0.1 ⓒ 96 X 10 ⓓ 9.6 X 10
5. 0.001 X .... = 0.25 ÷ 10
   ⓐ 0.25 ⓑ 2.5 ⓒ 25 ⓓ 250

Second: Complete the following:

1. 75.03 ÷ .... = 750.3
2. 18,000 ÷ 100 = ...
3. 18 X 0.01 = 18 ÷ ....
4. 45.36 cm = ... mm.
5. If 2.5 X 1.2 = 3, then 3 ÷ 25 = ...

Third: Match:

1. 25 X 0.1	ⓐ 2.5 ÷ 10
2. 2.5 X 0.1	ⓑ 2.5 ÷ 0.1
3. 2.5 X 0.01	ⓒ 0.25 ÷ 0.1
4. 2.5 X 10	ⓓ 0.25 ÷ 10

Fourth: Answer the following:

A factory for the manufacture of pasta produces **832.5** kg of pasta daily, which are packed in bags of **450** grams per bag. Find the number of bags needed for this.

....

....

....

Unit 6

Concept

Numerical Expressions and Patterns

6.1 | Evaluating Numerical Expressions

Exercises on Lessons 1 - 4

Numerical Expressions, Numerical Expressions with Grouping Symbols, Placing Grouping Symbols & Writing Expressions to Represent Scenarios

1 Use the order of operations to evaluate each expression, one step at a time:

1 $1.5 + 2.5 + 0.7$ = ... = ... = ...	2 $9.8 - 2.6 - 1.3$ = ... = ... = ...	3 $8.01 + 7 - 10.02$ = ... = ... = ...
4 $24 - 5.5 + 4.3$ = ... = ... = ...	5 $0.2 \times 2 \times 4.2$ = ... = ... = ...	6 $4.5 \div 3 \div 0.5$ = ... = ... = ...
7 $2.5 \times 8 \div 0.5$ = ... = ... = ...	8 $4.8 \div 6 \times 0.5$ = ... = ... = ...	9 $8 \times 2.5 + 10.2$ = ... = ... = ...
10 $4.2 \times 10 - 8.2$ = ... = ... = ...	11 $7.5 + 4 \times 2.4$ = ... = ... = ...	12 $1.5 - 0.3 \times 0.3$ = ... = ... = ...
13 $4 \div 0.8 + 2.5$ = ... = ... = ...	14 $0.36 \div 0.9 - 0.4$ = ... = ... = ...	15 $4.2 + 1.6 \div 2$ = ... = ... = ...

2 Use the order of operations to evaluate each expression, one step at a time:

1. $8.5 + 5.3 + 7.7 + 3.5$
= ....
= ....
= ....

2. $25 - 8.5 - 3.2 - 6$
= ....
= ....
= ....

3. $2.5 \times 10 \times 0.3 \times 0.1$
= ....
= ....
= ....

4. $0.36 \div 0.01 \div 0.6 \div 0.3$
= ....
= ....
= ....

5. $72 \times 0.1 + 0.5 \times 10$
= ....
= ....
= ....

6. $4.5 \times 100 - 50 \times 9$
= ....
= ....
= ....

7. $12 \div 0.4 + 1.5 \div 3$
= ....
= ....
= ....

8. $3.6 \div 0.9 - 0.24 \div 8$
= ....
= ....
= ....

9. $0.6 \times 8 + 7.5 \times 10 + 0.7 \times 3$
= ....
= ....
= ....

10. $7 \times 10 - 0.7 \times 50 - 0.3 \times 10$
= ....
= ....
= ....

11. $2.4 \div 3 + 3 \div 6 + 24 \div 0.8$
= ....
= ....
= ....

12. $4.8 \div 2 + 3.5 \div 7 - 6.4 \div 8$
= ....
= ....
= ....

13. $52 + 4.5 \times 10 - 7$
= ....
= ....
= ....

14. $45 - 14 + 2.5 \times 8$
= ....
= ....
= ....

15. $15 + 4 \times 0.3 - 0.2$
= ....
= ....
= ....

16. $8 + 0.35 \div 0.5 - 0.3 \times 4$
= ....
= ....
= ....

3 Use the order of operations to evaluate each expression, one step at a time:

1 4.2 X (10 – 9.2)
= ....
= ....
= ....
= ....

2 (7.5 – 4) X 0.1
= ....
= ....
= ....
= ....

3 (4.3 + 0.7) X 0.3
= ....
= ....
= ....
= ....

4 4 X (5.8 + 4.2)
= ....
= ....
= ....
= ....

5 0.36 ÷ (0.9 – 0.3)
= ....
= ....
= ....
= ....

6 (4.2 + 1.6) ÷ 2
= ....
= ....
= ....
= ....

7 2.4 ÷ (7.8 – 7.2)
= ....
= ....
= ....
= ....

8 16 ÷ (0.9 + 0.7)
= ....
= ....
= ....
= ....

9 (5.2 – 0.4) ÷ 6
= ....
= ....
= ....
= ....

4 Use the order of operations to evaluate each expression:

1 [0.85 X (2.7 + 7.3)] - 3.5
= ....
= ....
= ....
= ....

2 25 + [0.5 X (4.2 – 3) - 1]
= ....
= ....
= ....
= ....

3 [(20.5 – 10) X 0.3] ÷ 0.1
= ....
= ....
= ....
= ....

4 [(0.36+1.2) ÷ (0.6+0.2)] X 5
= ....
= ....
= ....
= ....

5 12 X [(0.1 + 0.5) X 10] ÷ 8
= ....
= ....
= ....
= ....

6 54 ÷ [75 X 0.1 – (15÷10)]
= ....
= ....
= ....
= ....

5 Place grouping symbols (parentheses and/or brackets) in the expressions to generate the given values. Sometimes grouping symbols are not needed.

1 (The value is 5)

0.5 X 5.4 + 4.6

= ....

= ....

= ....

= ....

2 (The value is 0.6)

5.6 - 5.5 X 6

= ....

= ....

= ....

= ....

3 (The value is 9)

4.5 ÷ 5 X 10

= ....

= ....

= ....

= ....

4 (The value is 24)

12 X 5.4 – 4.2 + 0.8

= ....

= ....

= ....

= ....

5 (The value is 4)

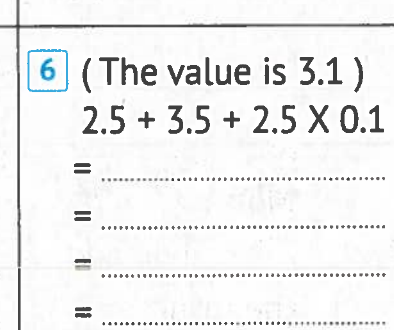
7.5 – 1.5 X 3 + 1

= ....

= ....

= ....

= ....



6 (The value is 3.1)

2.5 + 3.5 + 2.5 X 0.1

= ....

= ....

= ....

= ....

6 Match:

1 4.8 ÷ 0.2 X 0.4 + 1.2	**a** 61.2
2 4.8 ÷ 0.2 X (0.4 + 1.2)	**b** 3.75
3 4.8 ÷ (0.2 X 0.4) + 1.2	**c** 10.8
4 4.8 ÷ [(0.2 X 0.4) + 1.2]	**d** 38.4

7 For each problem, write an expression that matches the clues. Then, evaluate the expression:

1 Add 5.9 and 12.6. Then multiply the result by 10.

....

....

....

....

....

2 Add 5.25 and 3.1. Then divide the result by 0.1.

....

....

....

....

....

3 Multiply 0.542 by 100 and add 2.5.

....

....

....

....

4 Divide 456 by 10 and add 4.4.

....

....

....

....

5 Divide 93 by 0.3. Then add 114.7 and divide the result by 5.

....

....

....

6 Add 30.5, 5.5, and 4. Then subtract the result from 125.5 and finally multiply by 100.

....

....

....

7 Multiply 7.6 by 100. Next subtract 34.3. Then add 12.4. Finally divide the result by 0.1.

....

....

....

8 Divide 4.5 by 0.1. Then add 5.5. Multiply by 10.

....

....

....

....

8 Answer the following:

1 Adel bought 16.5 kg of apple. He gave 1.5 kg of them to his family and wants to give the rest to 5 of his friends. How many kilograms would each friend get if he divided it equally among them?

....

2 Maha walked 2.5 kilometers every day for two weeks. The following week, she walked 54.2 km. How many kilometers did she walk during those three weeks?

....

3 Bilal bought 6 bags of balloons. Each bag contains 12 balloons. He wants to give balloons to his friends at his birthday party. If he has 8 friends at the party, how many balloons will each friend take?

....

Assessment On Concept 1

First: Choose the correct answer:

1. 4.5 + 35 X 0.1 = ...
   (a) 8 (b) 3.95 (c) 0.8 (d) 39.5
2. 1.2 X (0.3 + 0.2) = ...
   (a) 0.56 (b) 0.6 (c) 6 (d) 5.6
3. The mathematical expression that expresses "Add 3.5 and 3.7. Then multiply by 0.8" is ....
   (a) 3.5 + 3.7 X 0.8 (b) (3.5 + 3.7) X 0.8 (c) 3.5 + (3.7 X 0.8) (d) 3.5 X 3.7 + 0.8
4. The mathematical expression " 4.5 – 0.3 ÷ 1.2 " is expressed as: ....
   (a) subtract 0.3 from 4.5. Then divide by 1.2
   (b) divide 0.3 by 1.2. Then subtract 4.5
   (c) subtract 4.5 from 0.3. Then divide by 1.2
   (d) divide 0.3 by 1.2. Then subtract the result from 4.5
5. 5.6 + 0.5 – 0.4 X 1.5 = ...
   (a) 6.1 – 0.6 (b) 5.6 + 0.1X 1.5 (c) 5.6 + 0.5 – 0.6 (d) 6.1 – 0.4 X 1.5

Second: Use the order of operations to evaluate each expression:

1. 9.2 + 2.5 X 4 ÷ 5
   = ...
   = ...
   = ...
2. 5 X [4.8 ÷ (8.4 – 7.2)]
   = ...
   = ...
   = ...
3. (6.7 – 2.3) X (8.5 + 2.5)
   = ...
   = ...
   = ...

Third: Place grouping symbols (parentheses and/or brackets) in the expressions to generate the given values. Sometimes grouping symbols are not needed.

1. (The value is 2.2)
   2.5 – 3 X 0.07 + 0.03
   = ...
   = ...
   = ...
   = ...
2. (The value is 0.5)
   8.5 – 3.5 ÷ 9.2 + 0.8
   = ...
   = ...
   = ...
   = ...
3. (The value is 10.38)
   6 + 0.4 X 2 – 2.42
   = ...
   = ...
   = ...
   = ...

Fourth: Answer the following:

Hoda is filling identical vases with water for flower arrangements at the florist. She starts with 15.75 liters and pours an equal amount into 16 vases. When she is finished, Hoda still has 3.75 L of water left. How much water is in each vase? Give your answer in liters. Write an expression that matches the scenario, then evaluate the expression. ....

Concept

6.2 Analyzing Numerical Patterns

Exercises on Lessons 5 - 7

Identifying Numerical Patterns, Extending and Creating Numerical Patterns & Solving Problems with Numerical Patterns

1 Write the rule for each pattern with a variable. Then, complete the pattern by finding the missing values:

1. 2, 5, 8, 11, 14, 17, ..., ..., ... Rule: ....
2. 3, 8, 13, 18, 23, 28, ..., ..., ... Rule: ....
3. 58, 54, 50, 46, 42, 38, ..., ..., ... Rule: ....
4. 90, 80, 70, 60, 50, ..., ..., ... Rule: ....
5. 1, 2, 4, 8, 16, 32, ..., ..., ... Rule: ....
6. 1, 3, 9, 27, 81, ..., ..., ... Rule: ....
7. 256, 128, 64, 32, ..., ..., ... Rule: ....

2 Write the rule for each pattern with a variable. Then, complete the pattern by finding the missing values:

1.

Input	Output
15	....
17	....
21	14
25	18
....	20

Rule: ....

2.

Input	Output
18	10
28	....
....	30
....	40
58	50

Rule: ....

3.

Input	Output
5	....
7	10
9	12
....	14
....	16

Rule: ....

4.

Input	Output
1	6
2	7
3	....
4	....
5	....

Rule: ....

5

Input	Output
39	....
33	....
27	9
21	7
....	5

Rule: ....

6

Input	Output
3	9
6	....
....	27
....	36
15	45

Rule: ....

7

Input	Output
6	....
10	5
14	7
....	9
....	11

Rule: ....

8

Input	Output
2	6
4	12
6	....
8	....
10	....

Rule: ....

3 Use the rule shown and complete the table:

1

Input	Output
15	....
....	5
35	....
....	9
55	....

Rule: n ÷ 5

2

Input	Output
3	....
....	27
15	....
....	72
27	....

Rule: n X 3

3

Input	Output
....	12
....	16
....	20
....	24
....	28

Rule: n – 4

4

Input	Output
1	....
2	....
3	....
4	....
5	....

Rule: n + 7

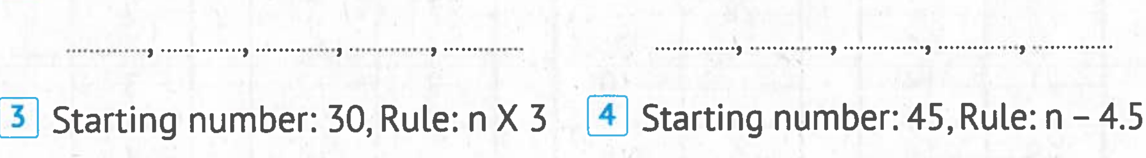
4 Using the given information, list the first five numbers in the pattern:

1 Starting number: 3, Rule: n + 5

.........., ..., ..., ..., ...

2 Starting number: 1.2, Rule: n + 0.3

.........., ..., ..., ..., ...



3 Starting number: 30, Rule: n X 3

.........., ..., ..., ..., ...

4 Starting number: 45, Rule: n – 4.5

.........., ..., ..., ..., ...



5 Starting number: 2, Rule: n x3

.........., ..., ..., ..., ...

6 Starting number: 0.005, Rule: n X 10

.........., ..., ..., ..., ...

7 Starting number: 32 , Rule: n ÷ 2

.........., ..., ..., ..., ...

8 Starting number: 1, Rule: n ÷ 0.5

.........., ..., ..., ..., ...

9 Starting number: 4, Rule: n X3 + 1

.........., ..., ..., ..., ...

10 Starting number: 2, Rule: (n+1)X2

.........., ..., ..., ..., ...

5 **Write the rule for each pattern with a variable. Then, complete the pattern by finding the missing values:**

1

Input	Output
7	....
11	....
15	4
19	5
....	6
27	7

Rule: ....

2

Input	Output
3	6
9	8
15	10
....	12
27	....
33	....

Rule: ....

3

Input	Output
1	....
2	10
3	14
4	18
....	22
....	26

Rule: ....

4

Input	Output
4	9
6	13
8	17
10	....
12	....
14	....

Rule: ....

5

Input	Output
1	....
2	....
3	27
4	64
....	125
6	216

Rule: ....

6

Input	Output
1	6
2	11
3	16
....	21
5	
6	

Rule: ....

7

Input	Output
9	....
11	4
13	5
15	6
....	7
....	8

Rule: ....

8

Input	Output
2	4
4	16
6	36
8	....
10	....
12	....

Rule: ....

6 Use a pattern to help you solve each problem:

1 When Salma was six years old, her brother Alaa was twice her age. Complete the following table and answer:

Salma's age	Alaa's age
6	....
7	....
....	16
15	....
20	....

a What is the age of Alaa when Salma is 12 years old?

....

b What is the age of Salma when Alaa was 8?

....

2 Hussam makes pancakes with sugar, he uses 150 gm of flour to make one pancake. Use the pattern to complete the table:

Number of Pancakes	Amount of Flour (gm)
1	150
2	....
3	450
4	....
5	....

a How much flour will it take to make 6 pancakes?

....

b How many pancakes does Hossam make using 1.5 kg of flour?

....

3 Fouad reads for 3 hours per day. Complete the following table and answer:

Number of Days	Number of Hours
2	....
5	....
....	21
8	....
10	....

a How many hours does Fouad read in 6 days?

....

b How many days does Fouad read for 9 hours?

....

4 Malak travels in her car at a speed of 80 km per hour. Complete the following table and answer:

Number of Hours	Distance (km)
1.5	....
2	....
....	200
3	....
....	400

a What is the distance traveled by her in 4 hours?

....

b How many hours does it take for Malak to travel 360 km?

....

Assessment on Concept 2

First: **Choose the correct answer:**

1. The pattern rule of (15 , 21 , 27 , 33 , 39 , 45 ,.......) is ....
   - a) n + 6
   - b) n – 6
   - c) n X 6
   - d) n ÷ 6

2. The next number in the pattern (1 , 1 , 2 , 3 , 5 , 8 , 13 ......) is ....
   - a) 42
   - b) 24
   - c) 16
   - d) 21

3. 1.5 + n is the rule of ....
   - a) 2.5 , 3.5 , 4.5 , 5.5 , 6.5 ,........
   - b) 2 , 3.5 , 5 , 6.5 , 8 ,........
   - c) 4 , 4.5 , 5 , 5.5 , 6 , 6.5 ,........
   - d) 2 , 4.5 , 7 , 9.5 , 12 , 14.5 ,........

4. The rule of the following pattern is ....

Input	Output
5	11
6	13
7	15

   - a) n X 2 + 1
   - b) (n + 1) X 2
   - c) n + 1 X 2
   - d) (n + 2) X 1

5. The rule of the following pattern is ....

Input	Output
31	10
34	11
37	12

   - a) n – 1 ÷ 3
   - b) n X 3 + 1
   - c) (n – 1) ÷ 3
   - d) n ÷ 3 – 1

Second: **Using the given information, list the first five numbers in the pattern:**

1. Starting number: 5, Rule: n + 5: ...., ..., ..., ..., ...
2. Starting number: 2, Rule: n X 2 – 0.5: ...., ..., ..., ..., ...

Third: **Write the rule for each pattern with a variable. Then, complete the pattern by finding the missing values:**

1. 3 , 8 , 13 , 18 , ..., ..., ... Rule : ....
2. 0 , 4 , 8 , 12 , ..., ..., ... Rule : ....
3. 128 , 64 , 32 , 16 , ..., ..., ... Rule : ....
4. 2 , 5 , 11 , 23 , 47 , ..., ..., ... Rule : ....

Fourth: **Answer the following:**

The library charges a fine on the first day of EGP 3 in case of the delay in returning the book. Another fine is charged for each additional day of 2 pounds.
If Khaled delays returning the book for three days, what is the amount that he will pay for the delay? (Indicate your answer) ....



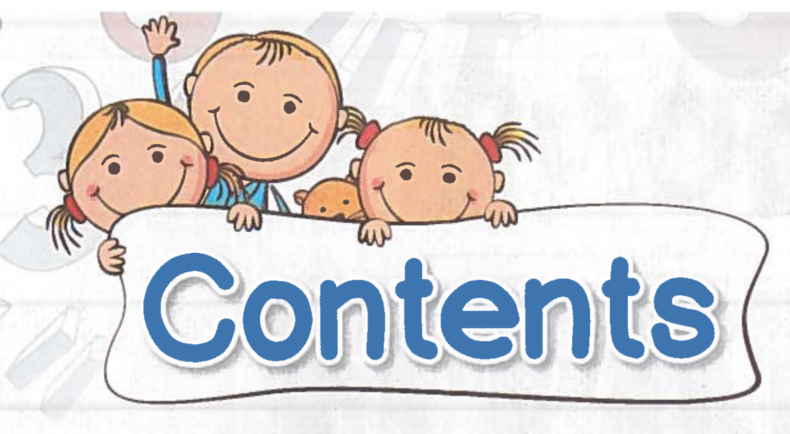
سلسلة كتب الاستاذ



EXERCISE BOOK

5th PRIMARY

FIRST TERM



Contents



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Theme 1

Number Sense and Operations



Units of the Theme

Unit 1 Decimal Place Value and Computation

Concept 1.1: Decimals to the Thousandths Place

Concept 1.2: Adding and Subtracting Decimals

Unit 2 Number Relationships

Concept 2.1: Expressions, Equations, and the Real World

Concept 2.2: Factors and Multiples

Unit 3 Multiplication with Whole Numbers

Concept 3.1: Models for Multiplication

Concept 3.2: Multiplying 4-Digit Numbers by 2-Digit Numbers

Unit 1 Concept

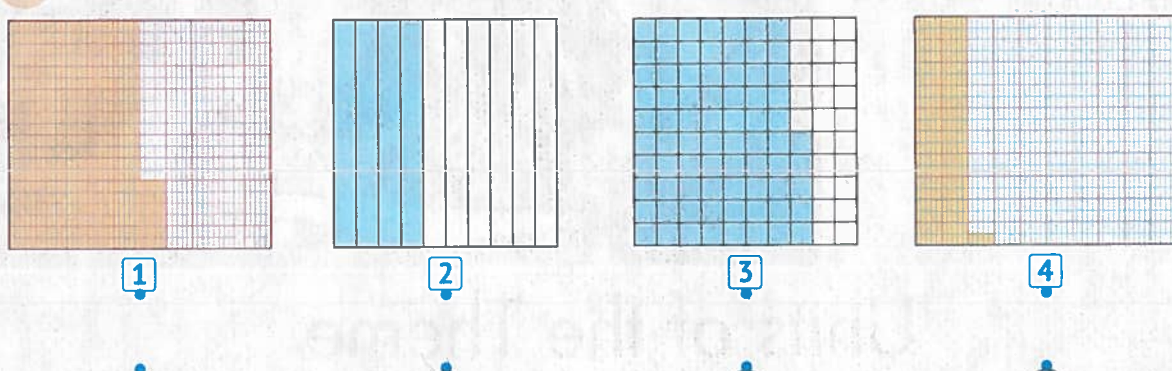
Decimal Place Value and Computation

1.1 Decimals to the Thousandths Place

Exercises on Lessons 1 & 2

The Journey Begins & Decimals to the Thousandths Place

1 Match each decimal model to the decimal number it represents:



1 2 3 4

a 0.400 b 0.205 c 0.530 d 0.750

2 Write each fraction as a decimal:

1 $\frac{45}{100}$ = ...

2 $\frac{5}{10}$ = ...

3 $\frac{982}{1,000}$ = ...

4 $\frac{57}{1,000}$ = ...

5 $8\frac{3}{100}$ = ...

6 $22\frac{5}{10}$ = ...

7 $9\frac{2}{10}$ = ...

8 $15\frac{239}{1,000}$ = ...

3 Complete the following:

1 Three hundred fifty-nine million, forty thousand, six and seventy-nine hundredths **(in standard form)**: ....

2 Six milliard, seventy thousand, ninety-six and five thousandths **(in standard form)**: ....

3 45,025,003.36 **(in word form)**: ....
....

4. 9,200,000,065.027 (**in word form**): ....

....

5. In 457,258,350.68, the digit 6 is in the .... place and its value is

....

6. In 500,725,235.102, the digit in the Hundredths is .... and its value is ....

7. The value of 9 in the Hundredths place is ....

8. If the value of 3 is 0.3, then its place value is ....

9. The greatest decimal number that can be formed from the digits (6, 3, 9, 8, 2, 7) up to the Hundredths is ....

10. The greatest decimal number that can be formed from the digits (8, 3, 2, 0, 8) up to the Tenths is ....

11. The smallest number that can be formed from the digits (3, 9, 0, 5) up to the Thousandths is ....

12. The smallest number that can be formed from the digits (8, 3, 5, 8, 2, 7, 2) up to the Hundredths is ....

13. 0.523 = ... thousandths, ... hundredths, ... tenths.

14. .... = 7 tenths, 9 thousandths.

15. .... = 2 hundredths, 4 thousandths.

4 Choose the correct answer:

1. Seven milliard, fifty thousand and seven hundredths = ...

(7,050.07 or 7,000,050.07 or 7,000,050,000.07 or 7,000,050,000,.07)

2. 56,000,500.035 (**in word form**): ....

(fifty-six thousand, five hundred and and thirty-five thousandths

or fifty-six million, five hundred and thirty-five thousandths

or fifty-six million, five hundred thousand and thirty-five thousandths

or fifty-six million, five hundred thousand and thirty-five hundredths)

3 The place value of 5 in 528,239.247 is ....

(Hundred Millions or Hundred Thousands or Hundreds or Hundredths)

4 The value of 0 in 247,369.205 is ....

(0.001 or 0.01 or 0.1 or 0)

5 If the value of 7 is 0.7, then its place value is ....

(Tenths or Ones or Tenths or Hundredths)

6 If the place value of 3 is Thousandths, then its value is ....

(0.003 or 0.03 or 0. or 3,000)

7 $4\frac{45}{100}$ = ... (4.45 or 445 or 4.045 or 45.4)

8 2.053 = ... ($2\frac{53}{10}$ or $2\frac{53}{100}$ or $2\frac{53}{1,000}$ or $\frac{253}{1,000}$)

9 The greatest decimal number that can be formed from the digits (9, 2, 2, 3, 7, 9) up to the Hundredth is ....

(9,973.22 or 2,237.99 or 99,732.2 or 22,379.9)

10 The greatest decimal number that can be formed from the digits (6, 8, 9, 4) is .... (9.864 or 98.64 or 986.4 or 9,864)

11 The smallest decimal number that can be formed from the digits (6, 2, 0, 8, 3) up to the Thousandths is ....

(2,036.008 or 86.302 or 2,036.8 or 20.368)

12 The number of Tenths in 0.386 is .... parts. (3 or 30 or 83 or 386)

13 6 hundredths = ... (6 or 0.60 or 0.060 or 0.006)

14 6 tenths, 9 thousandths = ... (0.609 or 0.069 or 6.009 or 0.906)

Assessment on Lessons 1&2

First: Complete the following:

1. Nine milliard, ninety thousand and nine thousandths **(in digits)**: ....
2. 6,200.09 **(in word form)**: ....
3. The place value of **9** in 596,258.27 is ....
4. The greatest **decimal** number formed from the digits (9, 8, 0, 2, 9, 5) up to the Hundredths is ....
5. The value of **0** in 653,852.208 is ....

Second: Choose the correct answer:

1. Four hundred million, thirty thousand and thirty hundredths = ...
   - (a) 400,030,000.30
   - (b) 400,030.03
   - (c) 4,030,000.30
   - (d) 430.30
2. 3,000,003.003 **(in word form)**: ....
   - (a) Three hundred, three million and three thousandths
   - (b) Three million, three and three thousandths
   - (c) Three million, three thousand and three thousandths
   - (d) Three hundred thousand, three and three thousandths
3. In ...., the place value of 5 is Hundredths.
   - (a) 500.46
   - (b) 46.005
   - (c) 40.056
   - (d) 46,500
4. The **smallest** decimal number that can be formed from the digits (5, 2, 3, 7, 2) up to the Thousandth is ....
   - (a) 22,357
   - (b) 2,235.7
   - (c) 223.57
   - (d) 22.357
5. The digit that represents the Thousandths in 4,568.178 is ....
   - (a) 1
   - (b) 7
   - (c) 8
   - (d) 4

Third: Match:

1. Nine hundred million **and** nine hundred thousandths
2. Nine hundred thousand **and** ninety hundredths
3. Nine hundred, nine **and** nine thousandths
4. Nine hundred million **and** nine thousandths
5. Nine hundred thousand **and** nine hundredths

- (a) 900,000.90
- (b) 909.009
- (c) 900,000,000.900
- (d) 900,000.09
- (e) 900,000,000.009

Exercises on Lessons 3 & 4

Place Value Shuffle & Composing and Decomposing Decimals

1 Find the result of each of the following using the place value chart:

1 4.52 X 10 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			

2 456.258 X 10 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			

3 56.28 ÷10 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			

4 253.9 ÷ 10 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			

5 9832 ÷10 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			

2 Complete the following:

1 The value of 9.25 increased when multiplying by 10 to ....

2 The value of .... increased when multiplying by 10 to 8.57.

3 The value of 36.6 .... when multiplying by 10 to 366.

4 The value of 0.25 decreased when dividing by 10 to ....

5 The value of .... increased when dividing by 10 to 24.8.

6 The value of 1.25 .... when dividing by 10 to 0.125.

7 893 ÷ 10 = ...

8 6.38 ÷ 10 = ...

9 .... ÷ 10 = 2.7

10 458.36 X 10 = ...

11 .... X 10 = 25

12 3,000 + 500 + 0.8 + 0.07 + 0.006 = ...

13 25 + 0.025 = ...

14 200 + 30 + 5 + 0.48 = ...

15 63 + 0.025 = ...

16 43.043 = 43 + ...

17 8,258.36 = 8,000 + 200 + 50 + 8 + ...

18 95.905 = ... **(in expanded form)**

19 85.36 = ... Tens + ... Ones + ... Tenths + ... Hundredths.

3 Choose the correct answer:

1 The value of .... increased when multiplying by 10 to 25.26.
(25.26 or 252.6 or 2.526 or 2,526)

2 The value of .... decreased when dividing by 10 to 0.026.
(0.026 or 0.26 or 2.6 or 26)

3 .... X 10 = 258 (2580 or 258 or 25.8 or 2.58)

4 45 X 10 = ... (450 or 0.45 or 4.5 or 40.5)

5 8.05 ÷ 10 = ... (805 or 8.5 or 80.5 or 0.805)

6 When all digits of a number move one place to the left, its value ....
. (decreases or increases or does not change or other)

7 When all digits of a number move one place to the ...., its value decreases. (right or left or other)

8 $23 + 0.02 + 0.003 =$ .... (2,302,00 or 2,323 or 23.023 or 23.23)

9 $824.12 =$ .... . ($824 + 1 + 2$ or $824 + 12$ or $824 + 0.12$ or $800 + 200 + 4 + 10 + 2$)

10 When 56.73 is multiplied by 10, the value of the digit 7 ....

(does not change or increases from 0.7 to 7 or increases from 70 to 700 or decreases from 0.7 to 0.07)

4 Match:

1 58.25 X 10	a 58 + 0.25
2 58.25 ÷ 10	b 582 + 0.5
3 582.5 X 10	c 5 + 0.825
4 582.5 ÷ 10	d 5,800 + 25

5 Use the digits (8, 5, 7, 0) and form the smallest decimal number up to the Thousandths, then multiply the result by 10, and complete:

Whole Number						Decimal Point	Decimals		
Thousands			Ones						
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			

1 The value of .... (increased/decreased) when multiplying by 10 from .... to ....

2 The value of .... (increased/decreased) when multiplying by 10 from .... to ....

3 The value of .... (increased/decreased) when multiplying by 10 from .... to ....

4 Therefore, the value of the whole number .... (increased/decreased) by a factor of **10** from .... to .... , **so** .... X .... = ...

Assessment on Lessons 3&4

First: Choose the correct answer:

1. The value of **45.26** increases when multiplying by 10 to ....
   - a) 4,526
   - b) 4.526
   - c) 452.6
   - d) 450.26
2. The value of .... decreases when dividing by 10 to **75.28**.
   - a) 752.8
   - b) 7.528
   - c) 750.28
   - d) 75.028
3. 400 + 50 + 0.2 + 0.004 = ...
   - a) 450.24
   - b) 450.024
   - c) 450.204
   - d) 45.204
4. 20.05 = ...
   - a) 20 + 5
   - b) 200 + 0.5
   - c) 2 + 0.005
   - d) 20 + 0.05
5. 85 ÷ 10 = ...
   - a) 8.5
   - b) 0.85
   - c) 0.085
   - d) 850

Second: Complete the following:

1. The value of .... increases when multiplying by 10 to 39.27.
2. The value of 270 is decreased when multiplying by 10 to ....
3. 45.012 = 45 + ...
4. 500 + 20 + 3 + 0.8 + 0.07 + 0.006 = ...
5. .... ÷ 10 = 45.9

Third: Match:

1. 78 X 10	a) 7.8
2. 78 ÷ 10 = ...	b) 70.8
3. 70 + 0.8 = ...	c) 780
4. 7 + 0.08 = ...	d) 70.08
5. 70 + 0.08 = ...	e) 7.08

Fourth: Put (✓) or (✗) in front of each statement:

1. The value of any number is increased when it's divided by 10. (   )
2. 85.24 X 10 = 8.524 (   )
3. 2.725 ÷ 10 = 27.25 (   )
4. 50 + 0.005 = 50.05 (   )
5. 200 + 20 + 0.2 + 0.002 = 220.202 (   )

Exercises on Lessons 5 & 6

Comparing Decimals & Rounding Decimals

1 Complete using (<, = or >):

1. 456.25 ⬭ 45.625
2. 79.02 ⬭ 790.2
3. 42.9 ⬭ 42.900
4. 12.500 ⬭ 12.050
5. 98.78 ⬭ 103.5
6. 90.05 ⬭ 900.5
7. 8.5 X 10 ⬭ 85 ÷ 10
8. 9.08 X 10 ⬭ 9.08 ÷ 10
9. 0.5 X 10 ⬭ 50
10. 85.03 ⬭ 80 + 5 + 0.03
11. 75 + 0.05 ⬭ 75.50
12. 107.05 ⬭ One hundred, seventy-five hundredths
13. 800,008.3 ⬭ Eight hundred, eight thousand and three tenths
14. 700,050,005.50 ⬭ Seven hundred million, fifty thousand, five and fifty hundredths
15. 400 + 4 + 0.4 + 0.004 ⬭ Four hundred four, four hundred and forty thousandths

2 Circle the greatest number:

1. 27.03 , 270.3 , 2.703
2. 56.38 , 56.038 , 560.38
3. 180.06 , 18.006 , 180.60
4. 900.900 , 900.090 , 900.009

3 Circle the smallest number:

1. 100.50 , 105.05 , 150.05
2. 900.25 , 90.025 , 902.05
3. 1,000.02 , 100,200 , 100.002
4. 8.237 , 80.237 , 802.037

4 Round each of the following using the midpoint strategy:

1 To the nearest whole number:

ⓐ 5.32 ≈ ....

ⓑ 69.47 ≈ ....

ⓒ 0.689 ≈ ....

ⓓ 99.87 ≈ ....

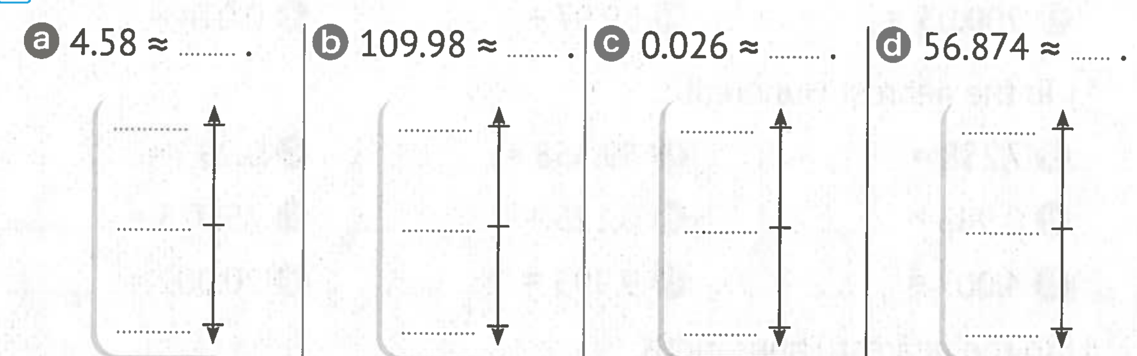
2 To the nearest Tenth:

ⓐ 4.58 ≈ ....

ⓑ 109.98 ≈ ....

ⓒ 0.026 ≈ ....

ⓓ 56.874 ≈ ....



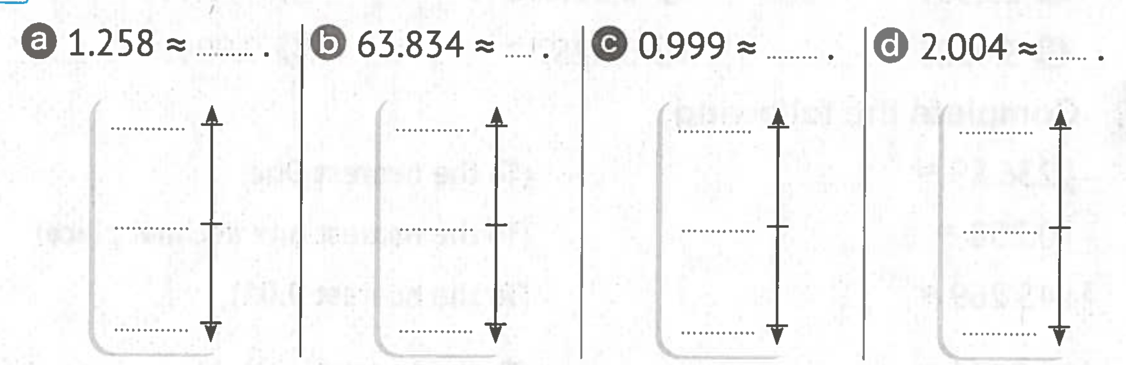
3 To the nearest Hundredth:

ⓐ 1.258 ≈ ....

ⓑ 63.834 ≈ ....

ⓒ 0.999 ≈ ....

ⓓ 2.004 ≈ ....

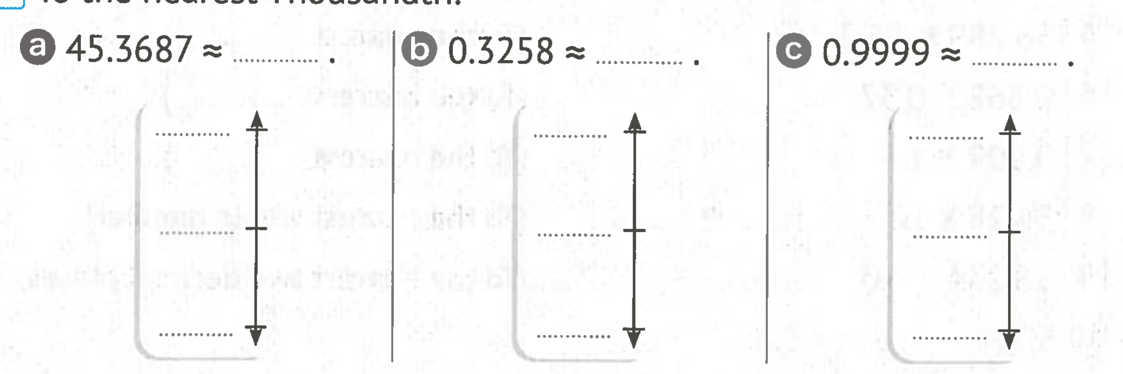


4 To the nearest Thousandth:

ⓐ 45.3687 ≈ ....

ⓑ 0.3258 ≈ ....

ⓒ 0.9999 ≈ ....



5 Round each of the following numbers using the rounding rule strategy:

1 To the nearest whole number:

ⓐ 5.28 ≈ .... ⓑ 9.38 ≈ .... ⓒ 0.368 ≈ ....

ⓓ 0.983 ≈ .... ⓔ 12.5 ≈ .... ⓕ 69.58 ≈ ....

ⓖ 100.7 ≈ .... ⓗ 999.9 ≈ .... ⓘ 53.248 ≈ ....

2 To the nearest Tenth:

ⓐ 23.54 ≈ .... ⓑ 4.258 ≈ .... ⓒ 0.97 ≈ ....

ⓓ 18.329 ≈ .... ⓔ 1.25 ≈ .... ⓕ 3.678 ≈ ....

ⓖ 200.03 ≈ .... ⓗ 59.97 ≈ .... ⓘ 0.024 ≈ ....

3 To the nearest Hundredth:

ⓐ 7.258 ≈ .... ⓑ 69.358 ≈ .... ⓒ 0.293 ≈ ....

ⓓ 0.983 ≈ .... ⓔ 0.125 ≈ .... ⓕ 75.075 ≈ ....

ⓖ 4.007 ≈ .... ⓗ 9.995 ≈ .... ⓘ 20.002 ≈ ....

4 To the nearest Thousandth:

ⓐ 25.3697 ≈ .... ⓑ 2,258.3645 ≈ .... ⓒ 100.0027 ≈ ....

ⓓ 3.0223 ≈ .... ⓔ 0.0257 ≈ .... ⓕ 9.9999 ≈ ....

6 Complete the following:

1 236.89 ≈ .... **(To the nearest One)**

2 0.258 ≈ .... **(To the nearest one decimal place)**

3 45.269 ≈ .... **(To the nearest 0.01)**

4 5.2423 ≈ .... **(To the nearest $\frac{1}{1,000}$)**

5 56.289 ≈ 56.3 **(To the nearest ....)**

6 0.368 ≈ 0.37 **(To the nearest ....)**

7 0.909 ≈ 1 **(To the nearest ....)**

8 56.28 X 10 = ... ≈ .... **(To the nearest whole number)**

9 56.234 ÷ 10 = ... ≈ .... **(To the nearest two decimal places)**

10 5.7 < .... < 5.8

7 Choose the correct answer :

1. 56.73 < .... (56.69 or 56.8 or 56.075 or 56.729)
2. 98.25 > .... (100.05 or 98.52 or 98.263 or 98.205)
3. 56.5 X 10 ( ) 565 ÷ 10 (< or = or > or ≤)
4. 0.32 X 10 ( ) 3.2 ÷ 10 (< or = or > or ≤)
5. 56 < .... < 57 (562 or 57.3 or 5.6 or 56.02)
6. .... ≈ 2.5 (To the nearest 0.1)

   (2.445 or 2.456 or 0.536 or 2.05)
7. .... ≈ 69 (**To the nearest whole number**)

   (69.5 or 68.4 or 68.369 or 69.45)
8. 56.298 ≈ 56.30 (**To the nearest** ....)

   (100 or 10 or 0.01 or whole number)
9. 63.245 ≈ 60 (**To the nearest** ....)

   (0.01 or 0.1 or 10 or whole number)
10. 56 + 0.02 + 0.007 ≈ .... (**To the nearest two decimal places**)

    (56.2 or 56.3 or 56.02 or 56.03)

8 Arrange the following numbers:

1. 56.25 , 56.52 , 56.025 , 56.502 , 56.052 (**Ascendingly**)

   .... < .... < .... < .... < ....
2. 6.005 , 5.006 , 50.06 , 60.05 , 5.060 (**Descendingly**)

   .... > .... > .... > .... > ....

Assessment on Lessons 5&6

First: Choose the correct answer:

1. 45 + 0.5 ◯ 450 + 0.05
   (a) < (b) > (c) = (d) ≤
2. .... ≈ 75.3 (To the nearest Tenth)
   (a) 75.03 (b) 75.39 (c) 750.3 (d) 75.34
3. 78.098 ≈ .... (To the nearest whole number)
   (a) 78.1 (b) 78 (c) 79 (d) 7
4. 68.567 ≈ 68.57 (To the nearest ....)
   (a) whole number (b) Tenth (c) Hundredth (d) Thousandth
5. .... ≈ 20.02 (To the nearest Hundredth)
   (a) 20.002 (b) 20.024 (c) 0.025 (d) 20.200

Second: Round the following numbers:

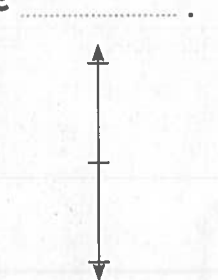
1. 458.025 ≈ .... (To the nearest Hundredth)
2. 458.025 ≈ .... (To the nearest Tenth)
3. 458.025 ≈ .... (To the nearest whole number)
4. 458.025 ≈ .... (To the nearest Ten)
5. 458.025 ≈ .... (To the nearest Hundred)

Third: Compare using (<, = or >):

1. 40.02 ◯ 400 + 2
2. 50.600 ◯ 5.006
3. 500 + 90 + 3 + 0.8 + 0.07 ◯ 593.87
4. 300.03 ◯ Three hundred and three tenths
5. 25 + 0.03 + 0.008 ◯ Twenty-five and eighty-three hundredths

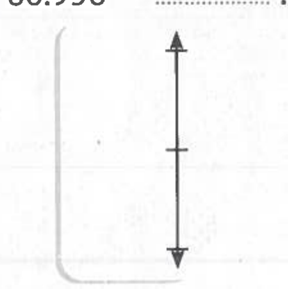
Fourth: Label the midpoint of the number line. Place the given decimal number at its proper location, and then round:

1. 65.25 ≈ ....



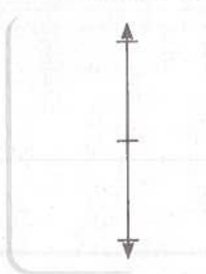
To the nearest whole number.

2. 80.958 ≈ ....



To the nearest Tenth.

3. 2.875 ≈ ....



To the nearest Hundredth.

Assessment On Concept 1

First: **Complete the following:**

1. Five milliard, five million, five hundred thousand and five thousandths = ... **(In digits)**
2. The smallest decimal number that can be formed from the digits (9 , 8 , 0 , 5 , 7) up to the Hundredths is ....
3. In 8,567.491, the place value of 9 is hundredths and its value is ....
4. The value of 586.47 is increased when multiplying by 10 to ....
5. 458.025 ≈ .... **(To the nearest Tenth)**

Second: **Choose the correct answer:**

1. The greatest decimal number that can be formed from the digits (8 , 5 , 9 , 0 , 7) is ....
   - (a) 89,750 (b) 9,870.5 (c) 50,789 (d) 5,078.9
2. The value of .... is decreased when dividing by 10 to 75.2.
   - (a) 7,520 (b) 7.52 (c) 752 (d) 75.200
3. 4,000 + 40 + 0.4 + 0.04 = ...
   - (a) 4,040.44 (b) 44.44 (c) 444.04 (d) 4,400.40
4. .... ≈ 75.60 **(To the nearest Hundredth)**
   - (a) 75.694 (b) 75.607 (c) 75.599 (d) 75.697

Third: **Compare using (<, = or >):**

1. 247.089 ◯ 247.100
2. 45.25 ◯ 45 + 25
3. 202.25 ◯ 20.225
4. 20.05 ◯ 20 + 0.05
5. 1,000 + 50 + 0.2 + 0.008 ◯ 1,500.280

Fourth: **Match:**

1. Three thousand and three thousandths = ...
2. 150 thousandths = ...
3. 400 + 20 + 0.1 + 0.008 = ...
4. 45.95 X 10 = ...
5. 19.999 ≈ .... **(To the nearest Hundredth)**

- (a) 0.15
- (b) 3,000.003
- (c) 20
- (d) 420.108
- (e) 459.5

Fifth: **Answer the following:**

Mazen is planning a trip from Cairo to El Fayoum. He will travel **147.72** kilometers. Round the distance to the nearest whole number. ....

Concept

1.2 | Adding and Subtracting Decimals

Exercises on Lessons 7 - 9

Estimating Decimal Sums, Modeling Decimal Addition & Thinking Like a Mathematician

1 **Estimate the sum of each of the following:**

1 Using rounding to the nearest Tenth strategy:

a) 56.35 + 25.04 .... + ... = ...	b) 6.358 + 15.25 .... + ... = ...	c) 96.35 + 69.5 .... + ... = ...
d) 8.25 + 0.999 .... + ... = ...	e) 63.25 +7.76 .... + ... = ...	f) 96.35 + 69.5 .... + ... = ...

2 Using benchmark decimals strategy:

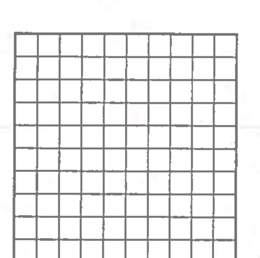
a) 0.92 + 0.56 .... + ... = ...	b) 25.96 + 3.4 .... + ... = ...	c) 6.9 + 3.02 .... + ... = ...
d) 0.79 + 2.03 .... + ... = ...	e) 4.7 + 9.05 .... + ... = ...	f) 6.01 + 4.53 .... + ... = ...

3 Using Front-End Estimation strategy:

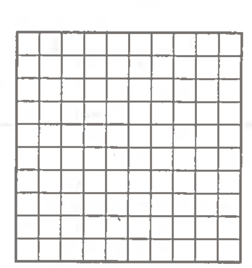
a) 45.36 + 36.15 .... + ... = ...	b) 6.37 + 4.25 .... + ... = ...	c) 563.24 + 556.47 .... + ... = ...
d) 0.35 + 1.25 .... + ... = ...	e) 3.656 + 0.963 .... + ... = ...	f) 45 + 49.53 .... + ... = ...

2 Add using the decimal model:

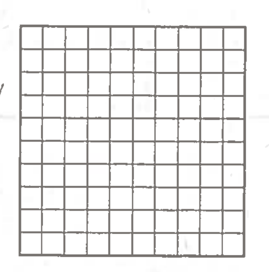
1 0.12 + 0.56 = ...



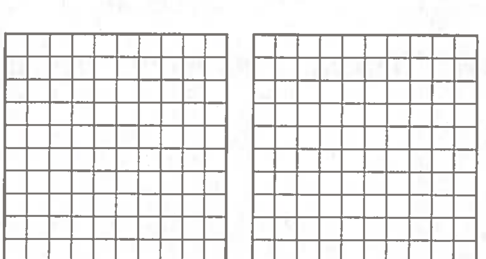
2 0.4 + 0.24 = ...



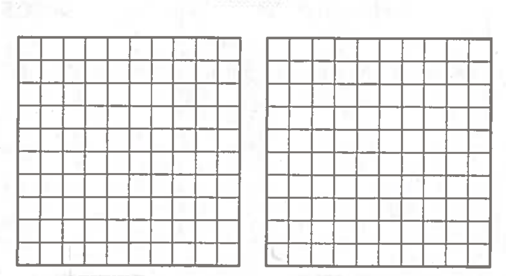
3 0.15 + 0.45 = ...



4 0.75 + 0.68 = ...



5 0.85 + 0.78 = ...



3 Add using the place value table:

1 456.25 + 23.028 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			

2 69,586.35 + 892 .9 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			

3 32.56 + 1,856.996 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			

4 69,586.35 + 892 .9 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			

5 69,245.7 + 36.578 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			

4 Find the result:

1
```
   56.458
+   7.58
---------
.........
```

2
```
  483.258
+ 736.27
---------
.........
```

3
```
   82.025
+ 129.975
---------
.........
```

4
```
   0.369
+ 12.57
--------
........
```

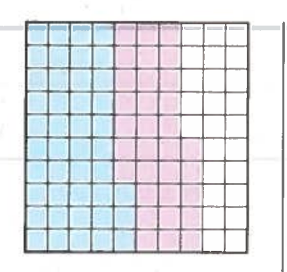
5 56.367 + 56,246.34 = ...

6 56.31 + 8,000.249 = ...

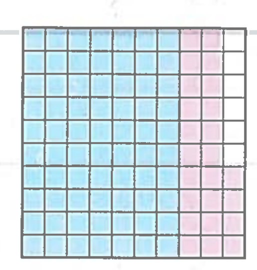
7 39.56 + 245.36 = ...

8 638.47 + 56,324.98 = ...

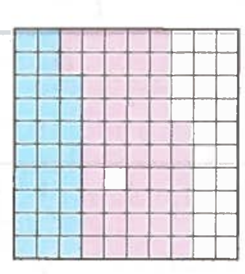
5 Write an expression to match the following models, and write an addition problem, then find the result:



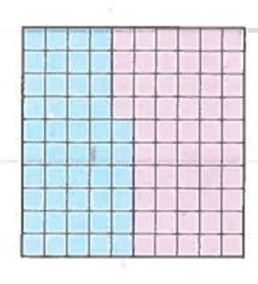
1 .... + ... = ...



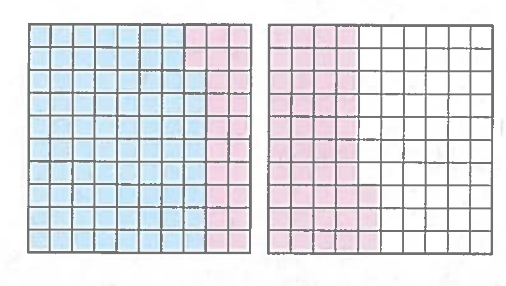
2 .... + ... = ...



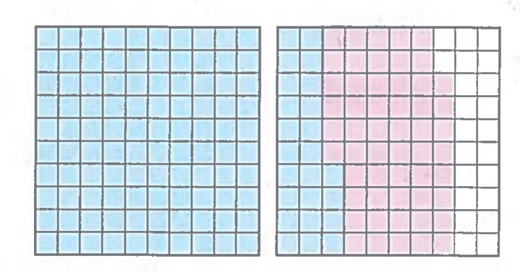
3 .... + ... = ...



4 .... + ... = ...



5 .... + ... = ...



6 .... + ... = ...

6 Complete the following:

1 7 Thousandths + 8 Thousandths = ... Thousandths.

Place value: .... Hundredths, ... Thousandths.

2 45 Thousandths + 15 Thousandths = ... Thousandths.

Place value: .... Hundredths, ... Thousandths.

3 456 Thousandths + 265 Thousandths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

4 5 Hundredths + 68 Thousandths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

5 15 Hundredths + 28 Hundredths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

6 3 Tenths + 28 Thousandths = ... Thousandths.

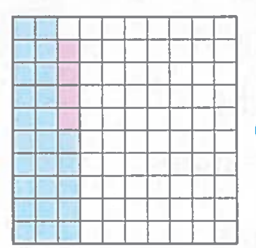
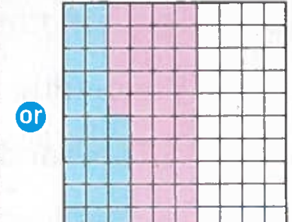
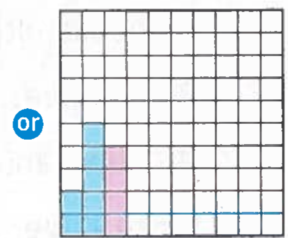
Place value: .... Tenths, ... Hundredths, ... Thousandths.

7 Complete the following:

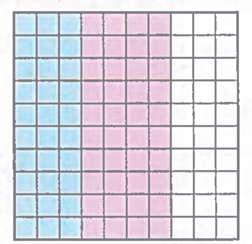
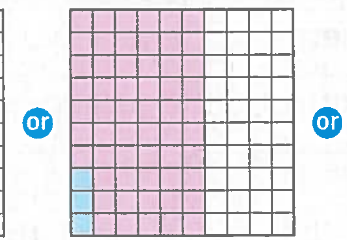
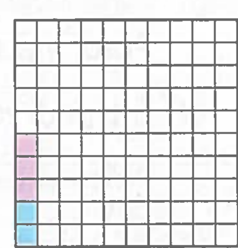
1. The benchmark decimal closest to 0.99 is ....
2. The benchmark decimal closest to 0.001 is ....
3. The benchmark decimal closest to 1.57 is ....
4. The estimate of the sum of 56.36 + 57.63 using rounding to the nearest 0.1 strategy is ....
5. The estimate of the sum of 7.59 + 3.89 using **Front-End Estimation strategy** is ....
6. 15 Hundredths + 37 Hundredths = ... Hundredths.
7. 5 Tenths + ... Hundredths = 560 Thousandths.
8. 45.36 + ... = 57.79
9. 0.45 + ... = 1
10. 0.2 + 0.5 + ... = 2

8 Choose the correct answer:

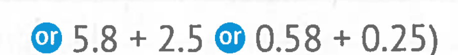
1. The model representing the addition problem 0.25 + 0.4 is ....

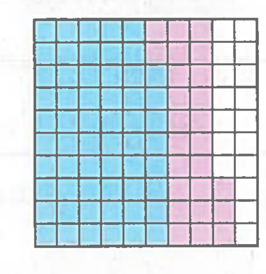
 or or  or 

2. The model representing the addition problem 0.3 + 0.4 is ....

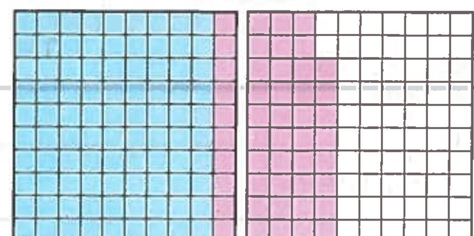
 or or  or 

3. The addition problem that represents the opposite model is .... (0.58 + 2.5 or 5.8 + 0.25


or 5.8 + 2.5 or 0.58 + 0.25)



4 The addition problem that represents the corresponding model is ....



(0.09 + 0.48 or 0.9 + 0.48 or 90 + 48 or 0.9 + 4.8)

5 The benchmark decimal closest to 0.45 is .... (0 or 0.5 or 1 or 1.5)

6 The benchmark decimal closest to 2.01 is .... (1 or 1.5 or 2 or 2.5)

7 The estimate of the sum of 3.752 + 2.358 using rounding to the nearest 0.01 strategy is .... (5 or 6.1 or 6.2 or 6.11)

8 4 Tenths + 3 Thousandths = ... Thousandths. (0.403 or 7 or 43 or 403)

9 0.7 + 1.2 + ... = 2 (1.9 or 1.1 or 0.1 or 0.3)

10 0.256 + ... = 1 (0.854 or 1.744 or 0.8 or 0.744)

9 Answer the following:

1 Malak wants to cycle **40** km in a week. By Thursday, Malak had covered **34.99** km, and on Friday she had covered **4.01** km.

Did Malak achieve her goal or not? (Show your answer)

....

....

2 A merchant bought **953.543** kilograms of fruit. The next day, he bought **240,615** kilograms. Estimate the total amount bought by the merchant in the two days. Use the strategy of rounding to the nearest 0.1.

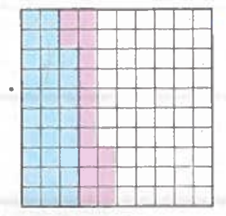
....

3 Fayrouz has **5** meters of fabric. If she needs **3.75** meters to make a dress, and **1.23** meters to make pants, estimate the length of the fabric that Fayrouz needs. Use the strategy of rounding to the nearest whole number. Is the fabric that she has enough or not?

....

Assessment on Lessons 7-9

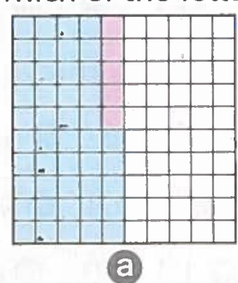
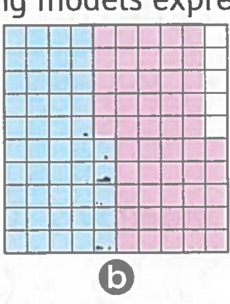
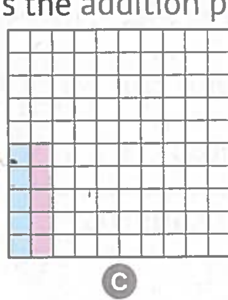
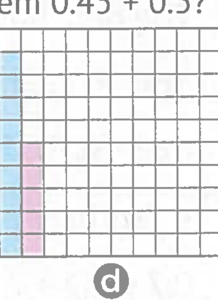
First: **Choose the correct answer:**



1 The expression that expresses the corresponding model is ....

ⓐ 0.28 + 0.15 ⓑ 2.8 + 1.5
ⓒ 2.8 + 0.15 ⓓ 0.28 + 1.5

2 Which of the following models expresses the addition problem 0.45 + 0.5?


ⓐ

ⓑ

ⓒ

ⓓ

3 5.25 + 32.7 = ...

ⓐ 37.92 ⓑ 8.52 ⓒ 85.2 ⓓ 37.95

4 0.75 + ... = 1

ⓐ 1.25 ⓑ 0.25 ⓒ 0.35 ⓓ 1.75

5 65.5 + 5 = ...

ⓐ 66 ⓑ 70.5 ⓒ 65.55 ⓓ 655.5

Second: **Complete the following:**

1 The estimated sum of 4.6 + 5.3 using rounding to the nearest whole number strategy is ....

2 The estimated sum of 6.12 + 3.28 using rounding to the nearest Tenth strategy is ....

3 4 Hundredths + 27 Thousandths = ... Thousandths.

4 452.8 + 2.782 = ...

5 .... + 0.62 = 1

Third: **Match:**

1 3.5 + 2.5 ....
2 0.35 + 0.25 = ...
3 0.35 + 2.5 = ...
4 3.5 + 0.25 = ...
5 35 + 25 = ...

ⓐ 0.6
ⓑ 2.85
ⓒ 6
ⓓ 60
ⓔ 3.75

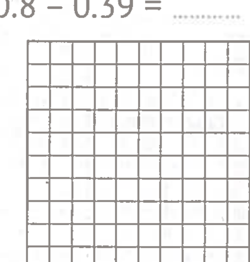
Exercises on Lessons 10-13

Subtracting Decimals, Estimating Decimal Differences, Subtracting to the Thousandths Place & Decimal Story Problems

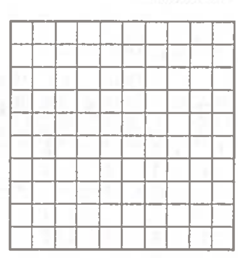
1 Subtract using the decimal model:

1 0.45 – 0.27 = ...

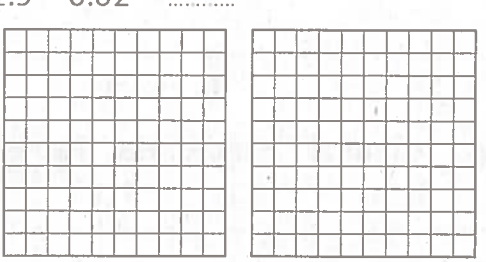
2 0.8 – 0.39 = ...



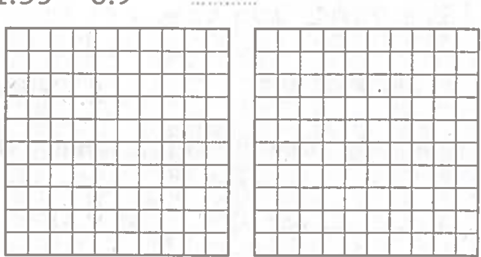
3 0.78 – 0.5 = ...



4 1.5 – 0.82 = ...



5 1.35 – 0.9 = ...



2 Subtract using the place value table:

1 563.45 – 158.23 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

2 700.25 – 56.258 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

3 45.369 – 9.98 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

4 56.023 – 9.88 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

5 1,250 – 889.56 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

6 56,025.35 – 9,258.9 = ...

Thousands			Ones			Decimal Point	Decimals		
Hundreds	Tens	Ones	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
						.			
						.			
						.			

3 Find the result:

1
```
   70.4
–   9.59
---------
.........
```

2
```
  523.147
–  92.57
---------
.........
```

3
```
  802.1
– 157.637
---------
.........
```

4
```
  5.105
– 0.89
---------
.........
```

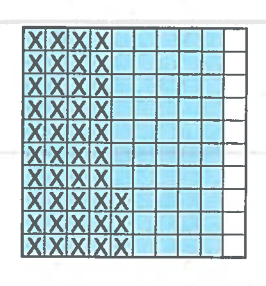
5 900.25 – 56 = ...

6 87.025 – 15.98 = ...

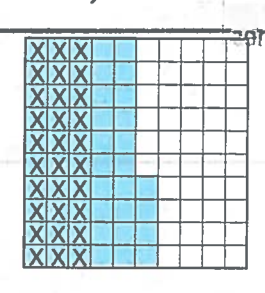
7 39.56 _ 245.36 = ...

8 21,000 – 23.45 = ...

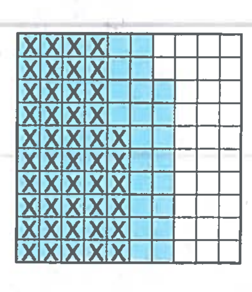
4 Write an expression to match the following models, and write the subtraction problem, then find the result:



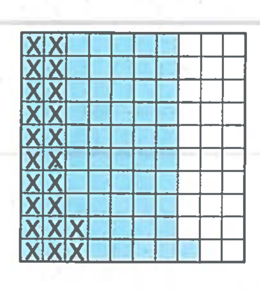
1 .... – .... = ...



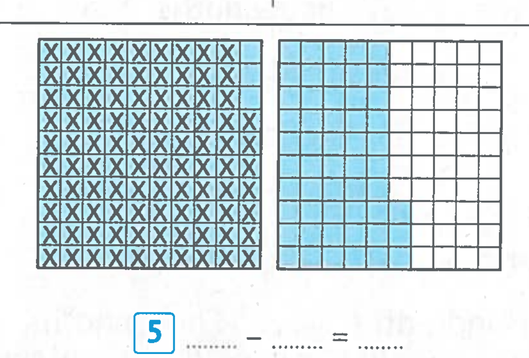
2 .... – .... = ...



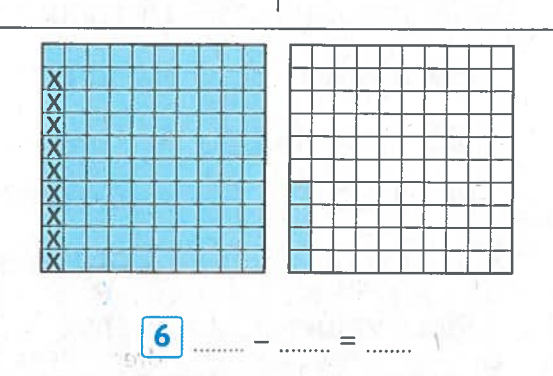
3 .... – .... = ...



4 .... – .... = ...



5 .... – .... = ...



6 .... – .... = ...

5 Estimate the difference of each of the following:

1 Using rounding to the nearest Tenth strategy:

a 75.02 – 27.18 .... – .... = ...	b 9.235 – 5.2 .... – .... = ...	c 25,152.24 – 105.45 .... – .... = ...
d 45.258 – 7.39 .... – .... = ...	e 56.321 – 9.8 .... – .... = ...	f 765.3 – 7.589 .... – .... = ...

2 Using benchmark decimals strategy:

a 0.99 – 0.51 .... – .... = ...	b 25.01 – 3.45 .... – .... = ...	c 8.9 – 2.001 .... – .... = ...
d 1.98 – 0.53 .... – .... = ...	e 7.01 – 0.65 .... – .... = ...	f 15.01 – 7.96 .... – .... = ...

3 Using Front-End Estimation strategy:

ⓐ 315.36 – 89.65 .... – .... = ...	ⓑ 28.39 – 15.25 .... – .... = ...	ⓒ 783.24 – 257.49 .... – .... = ...
ⓓ 5.49 – 2.04 .... – .... = ...	ⓔ 2.562 – 0.983 .... – .... = ...	ⓕ 15 – 12.55 .... – .... = ...

6 Complete the following:

1 79 Thousandths – 15 Thousandths = ... Thousandths.

Place value: .... Hundredths, ... Thousandths.

2 82 Thousandths – 47 Thousandths = ... Thousandths.

Place value: .... Hundredths, ... Thousandths.

3 620 Thousandths – 174 Thousandths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

4 14 Hundredths – 37 Thousandths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

5 63 Hundredths – 18 Hundredths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

6 5 Tenths – 24 Thousandths = ... Thousandths.

Place value: .... Tenths, ... Hundredths, ... Thousandths.

7 Complete the following:

1 The estimate of 56.36 – 14.63 using rounding to the nearest whole number strategy is ....

2 The estimate of 126.276 – 34.98 using rounding to the nearest $\frac{1}{100}$ strategy is ....

3 The estimate of 10.893 – 9.75 using rounding to the nearest 0.1 strategy is ....

4 The estimate of 9.99 – 7.58 using the benchmark decimal strategy is ....

5 The estimate of the sum of 75.23 – 9.25 using **Front-End Estimation** strategy is ....

6 75 Hundredths – 9 Hundredths = ... Hundredths.

7 7 Tenths – .... Hundredths = 650 Thousandths.

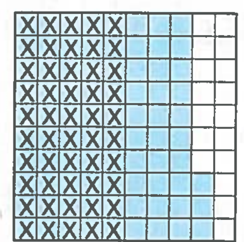
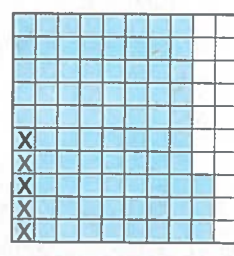
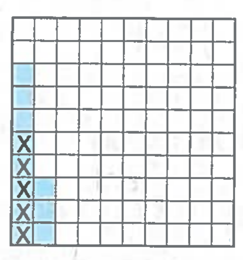
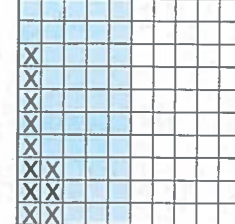
8 963.16 – .... = 56.35

9 1 – .... = 0.45

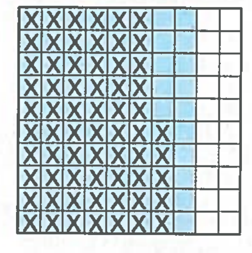
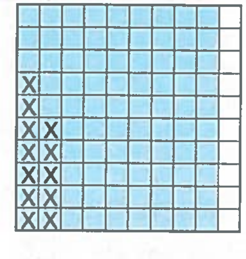
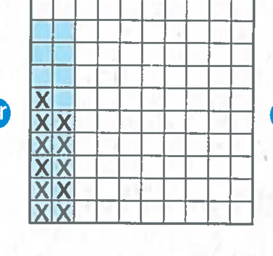
10 .... – 12.5 = 35.73

8 Choose the correct answer:

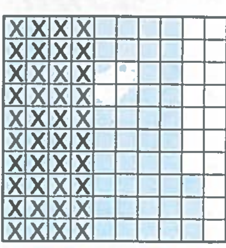
1 The model representing the subtraction problem 0.83 – 0.5 is ....

 or  or  or 

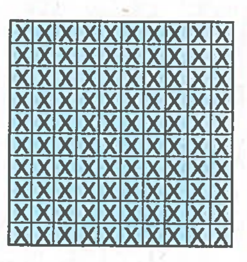
2 The model representing the subtraction problem 0.8 – 0.65 is ....

 or  or  or

3 The subtraction problem that represents the opposite model is .... (0.83 – 0.4 or 8.3 – 0.4 or 83 – 40 or 0.83 – 0.04)



4 The subtraction problem that represents the opposite model is ....
(1.72 – 0.17 or 1.72 – 1.7 or 1.72 – 1.17 or 172 - 117)



5 The estimate of 78.089 – 5.247 using rounding to the nearest 0.01 strategy is .... (72.84 or 72.842 or 72.9 or 65)

6 The estimate of 25.368 – 5.247 using rounding to the nearest 0.1 strategy is .... (20 or 20.2 or 20.12 or 25.121)

7 The estimate of 86.25 – 14.89 using rounding to the nearest whole number strategy is .... (71.36 or 71.4 or 71 or 70)

8 3 Tenths – 15 Thousandths = ... Thousandths. (2.85 or 285 or 0.15 or 0.285)

9 12.78 – .... = 8.8 (3.98 or 21.58 or 11.9 or 13.66)

10 1 – .... = 0.214 (786 or 0.786 or 1.214 or 0.213)

9 Answer the following:

1 Mohamed had **15,000** pounds. He bought a refrigerator for **7,520.25** pounds, and a washing machine for **5,640.5** pounds. How many pounds does Mohamed have left?

....

....

2 A road length of **675.5** km, of which the train traveled a distance of **239.47** km. What is the remaining distance from the road?

....

....

3 Tamer drinks **1.5** liters of water per day. If he drinks **0.5** liters in the morning and **0.7** liters at lunch, how many liters of water does he drink in the evening?

....

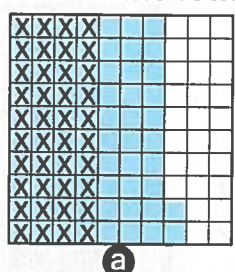
....

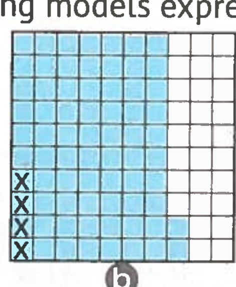
Assessment on Lessons 10-13

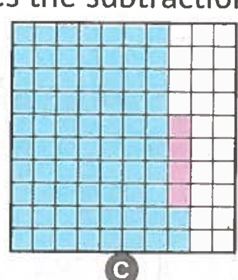
First: Choose the correct answer:

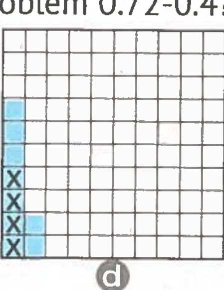
1. The expression that expresses the corresponding model is ....
   - ⓐ 0.42 – 0.27
   - ⓑ 4.2 – 2.7
   - ⓒ 4.2 – 0.27
   - ⓓ 0.42 – 2.7

2. Which of the following models expresses the subtraction problem 0.72-0.4?


ⓐ


ⓑ


ⓒ


ⓓ

3. 7.15 – 2.6 = ...
   - ⓐ 4.55
   - ⓑ 9.75
   - ⓒ 6.09
   - ⓓ 7.41

4. 1 – .... = 0.47
   - ⓐ 1.47
   - ⓑ 1.53
   - ⓒ 0.53
   - ⓓ 0.47

5. 8 – 0.45 = ...
   - ⓐ 8.45
   - ⓑ 8.55
   - ⓒ 7.45
   - ⓓ 7.55

Second: Complete the following:

1. The estimated difference of 4.2 – 1.8 using rounding to the nearest whole number strategy is ....
2. The estimated difference of 18.46 – 7.25 using rounding to the nearest Tenth strategy is ....
3. 5 Hundredths + 35 Thousandths = ... Thousandths.
4. 32.7 + 2.079 = ...
5. .... – 0.47 = 0.53.

Third: Match:

1. 15.2 – 5.2
2. 1.52 – 0.52
3. 15.2 – 0.52
4. 152 – 5.2
5. 152 – 52

- ⓐ 1
- ⓑ 10
- ⓒ 100
- ⓓ 14.68
- ⓔ 146.8

Fourth:

Emad caught three fish whose lengths were 29.28 cm, 29.255 cm, and 35.17 cm. What is their total length? What is the difference between the longest fish and the shortest fish? ....

....

Assessment on Concept 2

First: **Complete the following:**

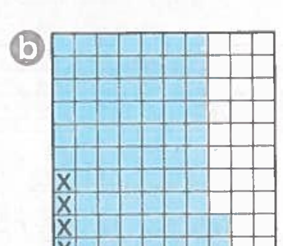
1. The estimated difference of 6.527 – 0.293 using rounding to the nearest Tenth strategy is ....
2. 7 Hundredths + 24 Thousandths = ... Thousandths.
3. 45.25 + ... = 90.5
4. 59.126 – 42.35 = ...
5. 5 Tenths – 5 Thousandths = ... Thousandths.

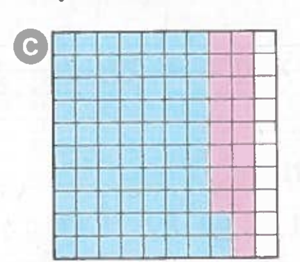
Second: **Choose the correct answer:**

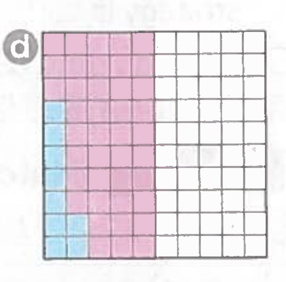
1. The expression that expresses the corresponding model is ....
   - (a) 0.5 – 0.27
   - (b) 0.5 – 2.7
   - (c) 0.5 + 0.27
   - (d) 0.5 + 27
2. The expression that expresses the corresponding model is ....
   - (a) 22 + 30
   - (b) 0.22 – 0.03
   - (c) 2.2 + 3.0
   - (d) 0.22 + 0.30
3. .... – 2.45 = 0.55
   - (a) 3
   - (b) 30
   - (c) 300
   - (d) 0.10
4. 5.456 – 3.456 = ...
   - (a) 8.912
   - (b) 200
   - (c) 20
   - (d) 2
5. 3 Tenths – 33 Thousandths = ... Thousandths.
   - (a) 0.267
   - (b) 267
   - (c) 2.67
   - (d) 26.7

Third: **Match each model to its expression:**

(a) 

(b) 

(c) 

(d) 

1. 0.72 – 0.04
2. 0.42 – 0.32
3. 0.09 + 0.41
4. 0.72 + 0.18

Fourth: **Answer the following:**

Emad had **56.5** pounds. He bought a pen for **12.25** pounds and a notebook for **15.5** pounds. How much money does Emad have left?

....

....

Unit 2 Concept

Number Relationships

2.1 | Expressions, Equations and the Real World

Exercises on Lesson 1

Expressions, Equations, and Variables

1 Choose the correct answer:

1. 45 + y – 2.5 is a/an ....

   (variable or mathematical expression or equation or other)

2. 25 + 5.7 X 2 is a/an ....

   (variable or mathematical expression or equation or other)

3. "Ahmed sleeps 7 hours a day." is a/an ....

   (variable or mathematical expression or equation or other)

4. 12 + 3.7 = y is a/an ....

   (variable or mathematical expression or equation or other)

5. 8 + x – 7 = 6.7 is a/an ....

   (variable or mathematical expression or equation or other)

6. "The largest 3-digit number is 999." is a/an ....

   (variable or mathematical expression or equation or other)

7. "Walaa has 1.25 kg of pistachios." is a/an ....

   (variable or mathematical expression or equation or other)

8. The equation that represents "12.5 plus a number equals 15." is ....

   (15 – x = 12.5 or 15 + x = 12.5 or 12.5 + x = 15 or 12.5 + 15 = x)

9 The equation that represents "a minus 12 equals 7.5." is ....

($a - 12 = 7.5$ or $12 - a = 7.5$ or $7.5 - a = 12$ or $12 - 7.5 = a$)

10 In the equation $45 - m = 25$, if 45 represents the number of students in one of the classes and 25 represents the number of girls in this class, then the variable **m** represents the ....

(number of girls or number of boys or number of students or number of teachers)

11 In the equation $75 - 56.3 = y$, if 75 represents the money that Yassin owns, and 56.3 represents the money he spent, then the variable **y** represents ....

(the money with him now or the money he spent or the money he got, or the money that was with him first)

12 Adel is comparing the height of two plants in the garden using this equation: $92.5 - n = 45.5$, where 92.5 is the height of one of them, then the variable **n** in this equation represents ....

(the difference between the height of the two plants, or the sum of the height of the two plants, or the height of one of the plants or Adel's height)

13 The equation $36.5 + 2.15 = m$ is similar to the equation ....

($36.5 = y + 2.15$ or $y + 36.5 = 2.15$ or $36.5 - y = 2.15$ or $2.15 + 36.5 = y$)

14 If the dimensions of a rectangle are 5.5 cm and 7.2 cm, then the variable "**p**" in the equation $7.2 + 5.5 + 7.2 + 5.5 = p$ represents the ....

(length or width or perimeter or area)

15 Huda bought a pen for 12.5 pounds and a ruler for 3.25 pounds. The equation that represents what Huda paid is ....

($3.25 + b = 12.5$ or $12.5 + b = 3.25$ or $12.5 - b = 3.25$ or $12.5 + 3.25 = b$)

2 Read the following story problems. Make an equation for each problem:

1. Hazem has 125 pounds. He bought books for 65.5 pounds. What is the remaining money with Hazem?

....

....

2. A classroom in a school has 21 girls and 15 boys. How many students are there in this class?

....

....

3. A cattle farm has 90 cows and 75 buffaloes. What is the difference between the number of cows and buffaloes?

....

....

4. Mazen is 145 cm tall and his brother Fouad is 20 cm taller than him. How tall is Fouad?

....

....

5. Two numbers whose sum is 255 and one of them is 107.5. What is the other number?

....

....

3 Match:

1. The difference between 5.5 and 3.7	a. $3.7 + 5.5 = y$
2. The sum of 5.5 and 3.7	b. $3.7 + a = 5.5$
3. 3.7 plus a number equals 5.5	c. $m - 3.5 = 3.7$
4. 5.5 minus a number equals 3.7	d. $5.5 - 3.7 = x$
5. A number minus 3.5 equals 3.7	e. $5.5 - n = 3.7$

Assessment on Lesson 1

First: Choose the correct answer:

1. $5 + x + 3$ is ....
   - ⓐ a variable ⓑ a mathematical expression ⓒ an equation ⓓ other
2. $7 + 5 = m + 3$ is ....
   - ⓐ a variable ⓑ a mathematical expression ⓒ an equation ⓓ other
3. In the equation **45 + x = 86**, if **86** represents the number of students in one of the classes and **45** represents the number of boys in this class, **x** represents ....
   - ⓐ the number of girls ⓑ the number of boys
   - ⓒ the number of students ⓓ the number of teachers
4. Hussam compared the lengths of two of his colleagues and wrote this equation: **1.52 – 1.25 = y**, the letter **y** represents ....
   - ⓐ the height of one of his colleagues
   - ⓑ the sum of the height of his colleagues
   - ⓒ the difference between the heights of his colleagues
   - ⓓ the height of Hussam
5. The equation that represents the difference between **4.25** and **3.79** is ....
   - ⓐ $m = 3.79 + 4.25$ ⓑ $m - 3.79 = 4.25$ ⓒ $m - 4.25 = 3.79$ ⓓ $m = 4.25 - 3.79$

Second: Put (✓) for the correct statement and (✗) for the wrong statement:

1. "**x** + 5 = 7.8" is called a mathematical expression. (   )
2. "4 + 5 = 12 – 3" is called an equation. (   )
3. In the equation **a** = 2.5 + 8.7, the variable "**a**" represents the difference between **8.7** and **2.5**. (   )
4. The equation 4.5 + 6.25 = **x** is the same as the equation 6.25 + 4.5 = **y**. (   )
5. The equation that represents "12.5 plus a number equals 15" is 12.5 + b = 15. (   )

Third: Match:

1. The difference between 18.5 **and** 12.5
2. The sum of 18.5 **and** 12.5
3. 12.5 **plus** a number equals 18.5
4. 18.5 **minus** a number equals 12.5
5. A number **plus** 12.5 equals 18.5

- ⓐ **a** = 18.5 + 12.5
- ⓑ **a** = 18.5 – 12.5
- ⓒ 18.5 – **a** = 12.5
- ⓓ **a** + 12.5 = 18.5
- ⓔ 12.5 + **a** = 18.5

Exercises on Lessons 2-4

Variables in Equations, Finding the Unknown & Telling Stories with Numbers

1 Use mental math to estimate the equations, and then solve them:

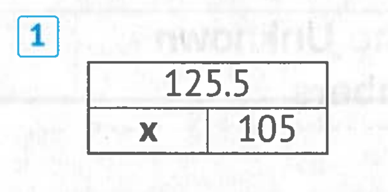
1. $2.45 + n = 5.24$ — n = ... n = ...
2. $y - 12.40 = 3.01$ — y = ... y = ...
3. $8.5 - m = 4.25$ — m = ... m = ...
4. $8.12 + x = 20$ — x = ... x = ...
5. $2.30 + 3.10 = 1.50 + v$ — v = ... v = ...
6. $2.377 + 3.1 = 1.52 + a$ — a = ... a = ...
7. $63 - 15 = p + 10$ — p = ... p = ...

2 Complete the following:

1. If $2.5 + 3.5 + y = 16$, then y = ...
2. If $x + 15.2 = 14.5 + 15.5$, then x = ...
3. If $95 - 65.27 = z - 29.73$, then z = ...
4. If $10.5 - 2.5 = a - 8$, then a = ...
5. If $m = 1.28$, then $m + 37.72$ = ...
6. If $b = 3.25$, then $b + 56.75$ = ...
7. If $e = 17.102$, then $e - 11.102$ = ...
8. If $r = 32.5$, then $48 - r$ = ...

3 Write an equation that expresses each of the following bar models, then find the value of the variable "x":

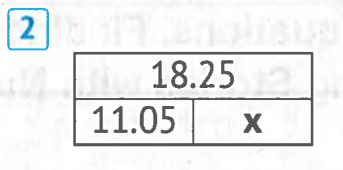
1



....

....

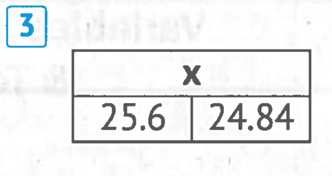
2



....

....

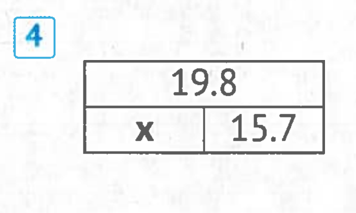
3



....

....

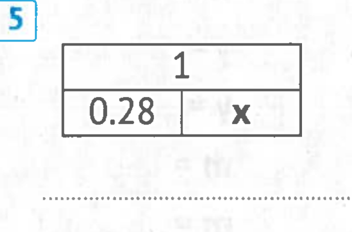
4



....

....

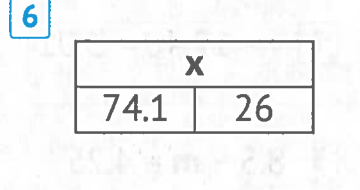
5



....

....

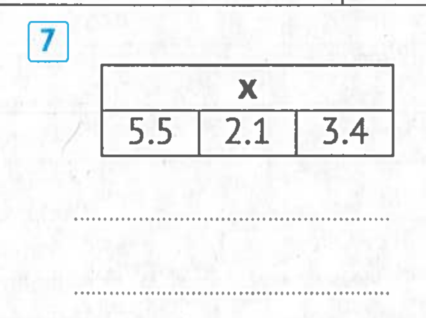
6



....

....

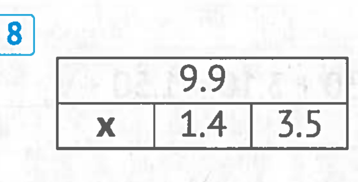
7



....

....

8



....

....

4 Choose the correct answer:

1. If 63.5 + **m** = 108.5, then **m** = ... (45 or 172 or 45.5 or 171.5)
2. If 75.5 – **x** = 15.5, then **x** = ... (91 or 60 or 90.1 or 60.5)
3. If **a** – 12.3 = 14.7, then **a** = ... (2.4 or 270 or 27 or 24)
4. If 3.45 + **y** = 7.13 + 2.15, then **y** = ... (9.28 or 3.68 or 12.73 or 5.83)
5. If **w** – 12.5 = 8.5 – 3.5, then **w** = ... (17.5 or 4 or 7.5 or 9)
6. The bar model that expresses the equation x + 3.5 = 11.3 is ....

([11.3 | x, 3.5] or [11.3 | 8, x] or [x | 3.5, 11.3] or [11.3 | x, 8])

7 The bar model that expresses the equation $s - 1.2 = 5.8$ is ....

5.8	
s	1.2

or

1.2	
5.8	s

or

s	
5.8	1.2

or

7	
s	5.8

8 The bar model that expresses the equation $m - 6.5 = 15.5$ is ....

m	
6.5	15.5

or

6.5	
15.5	m

or

15.5	
m	6.5

or

m	
6.5	9.5

9 The equation that expresses the corresponding bar model is ....

3.8	
y	2.7

($y + 2.7 = 3.8$ or $y - 2.7 = 3.8$ or $y - 3.8 = 2.7$ or $y + 3.8 = 2.7$)

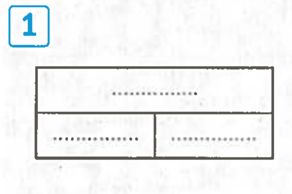
10 The equation that expresses the corresponding bar model is ....

w	
4.8	2.5

($w + 2.5 = 4.8$ or $4.8 - w = 2.5$ or $w = 4.8 - 2.5$ or $w - 2.5 = 4.8$)

5 Express each of the following equations using the bar model, and then solve the equation:

1



$m + 2.5 = 3.7$

m = ...

2

....	
....	....

$u - 3.75 = 9$

u = ...

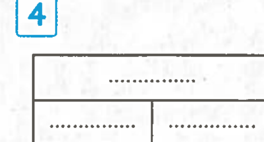
3



$9.8 - v = 6.7$

v = ...

4



$9.1 + 2.7 = s$

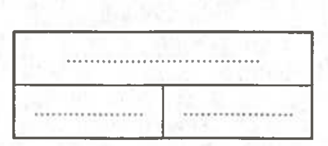
s = ...

6 Write an equation to represent the story problems using (n) as the variable and find its value. Use the bar models.

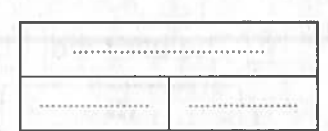
1 The distance between Cairo and Alexandria via the agricultural road is 225 km. Damanhour is located on the agricultural road, 61.3 km from Alexandria. How far is the distance between Damanhour and Cairo?

....

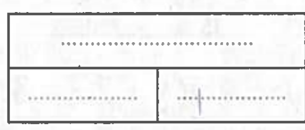
....



2 The sum of the height of the school building and the height of a tree adjacent to the building is 28.7 m. If the height of the school building is 20.5 meters, find the height of the tree.

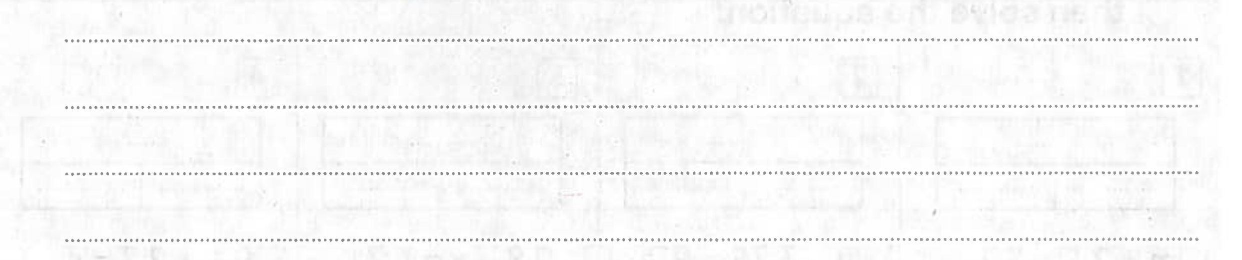


3 If Ahmed weighed 40.7 kg two years ago and his weight increased by 6.9 kg, what is Ahmed's weight now?



7 Write a story problem representing each equation, and then solve it:

1 $9.25 + 2.75 = m$



2 $x - 125 = 45.8$



Assessment on Lessons 2-4

First: Choose the correct answer:

1. If 78.45 + **y** = 90, then **y** = ...
   ⓐ 78.45 ⓑ 90 ⓒ 168.45 ⓓ 11.55

2. If 12 − **m** = 5.125, then **m** = ...
   ⓐ 12 ⓑ 5.125 ⓒ 6.875 ⓓ 17.125

3. If 2.5 + 3.4 + **x** = 7, then **x** = ...
   ⓐ 2.5 + 3.4 + 7 ⓑ 7 − 2.5 + 3.4 ⓒ 7 − (2.5 + 3.4) ⓓ (7 + 2.5) − 3.4

4. If 5.4 + 2.6 = **c** − 1.9, then **c** = ...
   ⓐ 6.1 ⓑ 8 ⓒ 9.9 ⓓ 7.3

5. The bar model that expresses the equation x + 5.5 = 7 is ....

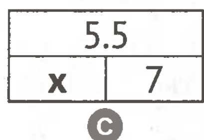
ⓐ

7	
x	1.5

ⓑ

x	
7	5.5

ⓒ



5.5	
x	7

ⓓ

7	
x	5.5

Second: Complete the following:

1. If 8.5 + **y** = 15, then **y** = ...
2. If 2.125 − **z** = 6.782 − 6.75, then **z** = ...
3. If **m** = 3.25, then **m** + 3.275 = ...
4. The value of **x** in the bar model is ....

8.005	
4.08	x

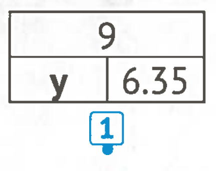
5. The equation that expresses the **bar model** is ....

12	
y	2.35

Third:

Match each model to the appropriate equation:

1.



9	
y	6.35

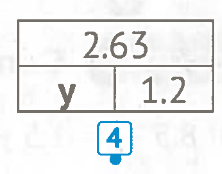
2.

y	
9.25	2.35

3.

y	
1.2	2.63

4.



2.63	
y	1.2

ⓐ y = 1.2 + 2.63 ⓑ y = 9.25 − 6.35 ⓒ y = 2.63 − 1.2 ⓓ y = 2.63 + 1.2

Fourth:

Ezz ran **3 days** last week, he ran **5.24 km** on Monday and **6.50 km** on Wednesday. If the total distance he ran during the week is **15 km**, what is the distance he ran on Friday? Write an equation to represent the problem, use **(m)** as the variable and find its value. Use the bar model.

....		
....	....	....

....

Assessment on Concept 1

First: Choose the correct answer:

1. $2.15 + x = 9.25$ is ....

   ⓐ a variable ⓑ a mathematical expression ⓒ an equation ⓓ other

2. If $28.45 - y = 15.05$, then $y =$ ....

   ⓐ 13.40 ⓑ 43.50 ⓒ 28.45 ⓓ 15.05

3. In the equation $38.50 + x = 80.25$, if 80.25 represents the amount that Hossam owns and 38.50 represents the amount remaining with him, then **x** represents ....

   ⓐ the amount he owns ⓑ the amount he has left

   ⓒ the amount he spent ⓓ other

4. The equation that represents the sum of 6.35 **and** 3.14 is ....

   ⓐ $m = 6.35 + 3.14$ ⓑ $m - 3.14 = 6.35$ ⓒ $m - 6.35 = 3.14$ ⓓ $m = 6.35 - 3.14$

5. The bar model that expresses the equation $x - 2.6 = 1.4$ is ....

ⓐ

2.6	
x	4

ⓑ

x	
2.6	1.4

ⓒ

1.4	
x	2.6

ⓓ

2.6	
x	1.4

Second: Complete the following:

1. If $8.5 - y = 1.5 + 6.5$, then $y =$ ....

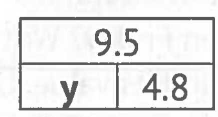
2. If $5.52 + 2.01 + x = 9.21$, then $x =$ ....

3. If $m = 3.01$, then $m - 0.5 =$ ....

4. Using the equation $f + 0.28 = 9.07$, complete the corresponding bar model.

....	
....	....

5. The equation that expresses the corresponding bar model is ....



Third: Put (✓) for the correct statement and (✗) for the wrong statement:

1. "$x + 3.2 = 1.2 + 7.8$" is called a variable. ( )
2. The equation $7.2 + 1.05 = x$ is similar to the equation $1.05 + 7.2 = y$. ( )
3. If $5.63 - m = 2.15$, then $m = 5.63 + 2.15$. ( )
4. The equation that represents the difference between 18.5 and 12.5 is $z - 18.5 = 12.5$. ( )
5. The equation that represents the corresponding bar model is $9.05 + w = 11.35$. ( )

11.35	
9.5	w

Fourth: Write the **equation** that represents each bar model, and then solve it:

1.

30.258	
15.27	m

....

....

2.

y	
3.05	4.123

....

....

3.

9.253	
x	6.7

....

....

Fifth: Answer the following:

1. Bassem bought **two** watermelons with a total mass of **2.64 kg**. If the first watermelon had a mass of **1.36 kg**, what is the mass of the second watermelon? Write an equation to represent the problem, use (**m**) as the variable and find its value. Use the bar model.



2. Write a story problem representing the following equation and then solve it:

$w = 9.2 - 5.025$

....

....

Concept

2.2 Factors and Multiples

Exercises on Lessons 5 & 6

Finding Factors & Prime Factorization

1 **Fill in the missing factors represented by the variables:**

1 $3 \times m = 15$ $m =$	2 $v \times 7 = 49$ $v =$	3 $8 \times t = 48$ $t =$ ....
4 $g \times 5 = 65$ $g =$	5 $u \times 12 = 48$ $u =$	6 $9 \times e = 63$ $e =$ ....

2 **Find the factors of each of the following numbers using the method you prefer:**

1 8

The factors of 8 are:

....

....

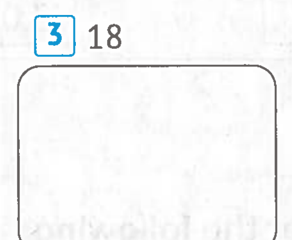
2 12

The factors of 12 are:

....

....

3 18



The factors of 18 are:

....

....

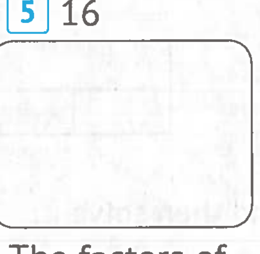
4 24

The factors of 24 are:

....

....

5 16

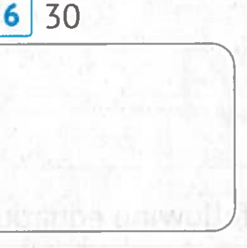


The factors of 16 are:

....

....

6 30



The factors of 30 are:

....

....

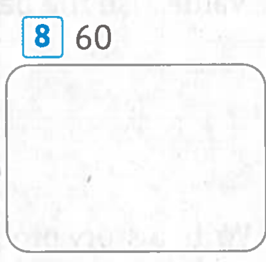
7 42

The factors of 42 are:

....

....

8 60



The factors of 60 are:

....

....

3 Factorize each number into its prime factors using the factor tree:

1 6	2 10	3 12	4 16
6 = ...	10 = ...	12 = ...	16 = ...
5 18	**6** 24	**7** 32	**8** 36
18 = ...	24 = ...	32 = ...	36 = ...

4 Complete the following sentences:

1. The number of factors of a prime number is ....factors.
2. All prime numbers are odd numbers, except .... which is an even number.
3. .... is the smallest prime number.
4. .... is the smallest odd prime number.
5. .... is a number greater than one and has only two factors.
6. The smallest 2-digit prime number is ....
7. The prime numbers less than 10 are ....
8. The number of factors of 25 is .... factors.
9. 1, 2, 4, 8, 16 are the factors of ....
10. The prime factors of 21 are ....
11. 2 is a factor of all numbers whose Ones digit is ...., ..., ..., ... or ....
12. The number whose prime factors are 2, 3, 3 is ....

13 If the prime factors of a number are 2 X 3 X 3, then the factors of this number are ....

14 If the factors of a number are 1, 2, 4, 8, then the prime factors of this number are ....

5 Choose the correct answer:

1 .... is a factor of all numbers. (0 or 1 or 2 or 3)

2 The number of factors of 9 is .... factors. (2 or 3 or 4 or 6)

3 .... is a prime number. (51 or 52 or 57 or 59)

4 The two numbers 3 and 5 together are prime factors of .... (30 or 25 or 18 or 53)

5 The prime number .... (has no factors or has one factor only or has two factors only or has three factors only)

6 .... is a factor of 24. (14 or 18 or 17 or 12)

7 The numbers 2, 3, 5, 7 are .... numbers . (even or odd or prime or composite)

8 The prime factors of 12 are .... (2 x 6 or 3 x 4 or 2 x 2 x 3 or 1 x 12)

9 If the factors of a number are 1, 2, 3, 6, then its prime factors are .... (1 X 6 or 1 X 2 or 2 X 3 or 2 X 6)

10 If the prime factors of a number are 2 X 2 X 2, then the number is .... (8 or 4 or 6 or 222)

6 Put (✓) in front of the correct statement, and (✗) in front of the wrong statement:

1 17 is a prime number. (   )

2 22 is a composite number. (   )

3 The prime number whose sum of factors is 8 is 7. (   )

4 The smallest prime number is 1. (   )

5 All prime numbers are odd numbers. (   )

6 4 is a prime number because it has more than two factors. (   )

7 The smallest even prime number is 2. (   )

8 The smallest odd prime number is 3. (   )

9 2, 2 and 5 are the prime factors of 10. (   )

Assessment on Lessons 5&6

First: Choose the correct answer:

1 The number of factors of **16** is ....

ⓐ 3 ⓑ 4 ⓒ 5 ⓓ 6

2 If the factors of a number are **1, 2, 3, 4, 6, 12**, then its prime factors are ....

ⓐ 2 x 2 x 3 ⓑ 3 x 4 ⓒ 2 x 6 ⓓ 1 x 12

3 The **smallest** prime number formed from two digits is ....

ⓐ 2 ⓑ 10 ⓒ 11 ⓓ 12

4 **4** is a factor of ....

ⓐ 14 ⓑ 34 ⓒ 22 ⓓ 32

5 The two numbers **2** and **7** together are prime factors of ....

ⓐ 72 ⓑ 14 ⓒ 27 ⓓ 9

Second: Match:

1 Factors of **20**	ⓐ 2, 3, 5, 7
2 Prime factors of **20**	ⓑ 1, 2, 4, 5, 10, 20
3 Prime numbers less than **10**	ⓒ 2, 3, 3
4 Factors of **18**	ⓓ 2, 2, 5
5 Prime factors of **18**	ⓔ 1, 2, 3, 6, 9, 18

Third: Complete the following:

1 All prime numbers are odd numbers, except .... is an even number.

2 If **a** X 9 = 36, then **a** = ...

3 The prime factors of 25 are: **25** = ...

4 **5** is a factor of the numbers whose Ones digit is .... or ....

5 A number whose prime factors are **2, 2** and **5** is ....

Fourth: Factorize each number into its prime factors using the factor tree:

1 45

45 = ...

2 32

32 = ...

3 60

60 = ...

Exercises on Lesson 7

Greatest Common Factors (GCF)

1 Find the greatest common factor (GCF) of each of the following:

1 12, 8

12 = ...

8 = ...

GCF = ... = ...

2 16, 20

16 = ...

20 = ...

GCF = ... = ...

3 9, 18

9 = ...

18 = ...

GCF = ... = ...

4 18, 35

18 = ...

35 = ...

GCF = ... = ...

5 32, 24

32 = ...

24 = ...

GCF = ... = ...

6 36, 48

36 = ...

48 = ...

GCF = ... = ...

7 60, 45

60 = ...

45 = ...

GCF = ... = ...

8 42, 28

42 = ...

28 = ...

GCF = ... = ...

9 4 X 8 , 6 X 2 X 2

....

....

GCF = ... = ...

10 6 X 9 , 8 X 9

....

....

GCF = ... = ...

2 Complete the following sentences:

1. If **y** = 2 X 2 X 2 X 2, then **y** = ...
2. If **d** = 3 X 3 X 5, then **d** = ...
3. The factors of **27** are ....
4. The factors of **31** are ....
5. The prime factors of **17** are ....
6. The prime factors of **26** are ....
7. The greatest common factor of **3** and **5** is ....
8. The greatest common factor of **7** and **14** is ....
9. The prime number whose factors sum is 12 is ....
10. The first number between **90** and **100** is ....

3 Choose the correct answer:

1. The prime factors of **14** are .... (2X7 or 1X14 or 1X2X7 or 2X3X4)
2. The prime factors of **16** are .... (2X8 or 2X2X4 or 4X4 or 2X2X2X2)
3. If the **prime** factors of a number are 2,3,3, then the factors of this number are .... (1,2,3,3 or 1,2,9,18 or 1,2,3,6,9,18 or 1,3,6,19)
4. If the **prime** factors of a number are 2,2,5, then the factors of this number are .... (1,2,5,10 or 1,4,5,10 or 2,4,5,10 or 1,2,4,5,10,20)
5. The **greatest common factor** of any two prime numbers is .... (the largest number or the smallest number or one or zero)
6. The **greatest common factor** of two numbers, one of which is a factor of the other is .... (the largest number or the smaller number or the product of the two numbers or the sum of the two numbers)
7. The **greatest common factor** of 28 and 14 is .... (7 or 2 or 28 or 14)
8. The **greatest common factor** of 11 and 5 is .... (11 or 5 or 1 or 16)
9. The common **prime** factors of two numbers are 2, 2, 3, then the **GCF** For these two numbers .... (223 or 7 or 12 or 24)
10. The **common** factor of two numbers are 1, 2, 3, 6, then the **GCF** for these two numbers is .... (36 or 6 or 12 or 16)

Assessment on Lesson 7

First: Choose the correct answer:

1. The prime factors of **14** are ....
   - ⓐ 2
   - ⓑ 2, 7
   - ⓒ 1, 2, 7, 14
   - ⓓ 2

2. If the **prime** factors of a number are **2, 2, 3**, then the factors of this number are ....
   - ⓐ 2 X 2 X 3
   - ⓑ 2 , 6
   - ⓒ 12
   - ⓓ 1,2,3,4,6,12

3. The **greatest common factor** of any two prime numbers is ....
   - ⓐ the largest number
   - ⓑ the smallest number
   - ⓒ 1
   - ⓓ there is no common factors

4. The greatest common factor of **21** and **7** is ....
   - ⓐ 7
   - ⓑ 21
   - ⓒ 28
   - ⓓ 14

5. The common **prime** factors of two numbers are: **2, 3, 5**, then the GCF of these two numbers is ....
   - ⓐ 6
   - ⓑ 30
   - ⓒ 10
   - ⓓ 2

Second: Complete the following sentences:

1. If **n** = 2 X 2 X 7 then, n = ...
2. The factors of **23** are ....
3. The prime factors of **19** are ....
4. The **greatest common factor** of **8** and **5** is ....
5. A prime number whose factors sum is **6** is ....

Third: Find the greatest common factor for each of the following:

1. **30 , 20**

   30 = ...

   20 = ...

   GCF = ... = ...

2. **12 , 48**

   12 = ...

   48 = ...

   GCF = ... = ...

Fourth:

Find the **greatest common factor** for the two numbers (6 X 6) and (5 X 8).

....

Exercises on Lessons 8 & 9

Identifying Multiples & Least Common Multiple (LCM)

1 Circle the multiples of the following numbers:

1. 3 → 2 , 6 , 12 , 14 , 21 , 25 , 30 , 37 , 42
2. 6 → 0 , 2 , 18 , 21 , 30 , 42 , 52 , 56 , 60
3. 10 → 5 , 15 , 10 , 25 , 35 , 40 , 50 , 95 , 100
4. 5 → 8 , 12 , 25 , 45 , 59 , 85 , 150 , 551 , 15
5. 7 → 2 , 14 , 27 , 35 , 47 , 49 , 63 , 77 , 81

2 Answer the following:

1. a. List the first 10 multiples of 3: ....
   b. List the first 5 multiples of 6: ....
   c. The common multiples of 3 and 6 of those you listed: ....
   d. The least common multiple of the two numbers is ....
2. a. List the first 7 multiples of 6: ....
   b. List the first 7 multiples of 4: ....
   c. The common multiples of 6 and 4 of those you listed: ....
   d. The least common multiple of the two numbers is ....
3. a. List the first 5 multiples of 8: ....
   b. List the first 10 multiples of 4: ....
   c. The common multiples of 8 and 4 of those you listed: ....
   d. The least common multiple of the two numbers is ....
4. a. List the first 10 multiples of 2: ....
   b. List the first 5 multiples of 6: ....
   c. List the first 8 multiples of 8: ....
   d. The common multiples of 2, 6 and 8 of those you listed: ....
   e. The least common multiple of the numbers is ....

3 Find the GCF and LCM for each of the following:

1 8, 6

8 = ...

6 = ...

GCF = ... = ...

LCM = ... = ...

2 12, 16

12 = ...

16 = ...

GCF = ... = ...

LCM = ... = ...

3 15, 6

15 = ...

6 = ...

GCF = ... = ...

LCM = ... = ...

4 10, 8

10 = ...

8 = ...

GCF = ... = ...

LCM = ... = ...

5 18, 12

18 = ...

12 = ...

GCF = ... = ...

LCM = ... = ...

6 21, 14

21 = ...

14 = ...

GCF = ... = ...

LCM = ... = ...

7 28, 14

28 = ...

14 = ...

GCF = ... = ...

LCM = ... = ...

8 24, 36

24 = ...

36 = ...

GCF = ... = ...

LCM = ... = ...

4 choose the correct answer:

1. .... is a multiple of **9**. (19 or 6 or 3 or 27)
2. **14** is a multiple of .... (4 or 7 or 21 or 28)
3. The common multiple of all numbers is .... (1 or 2 or 3 or 0)
4. The LCM of **9** and **6** is .... (54 or 36 or 18 or 9)
5. The LCM of **8** and **10** is .... (10 or 80 or 8 or 40)
6. .... is a number that has more than one set of factor pairs (Prime number or Factor or Multiple or Composite number)
7. .... is the number that is **multiplied** by another number to get the product. (Prime number or Factor or Multiple or Composite number)
8. Counting by jumping is a way to find the .... of a number. (sum or factors or multiples or other)
9. The least common multiple of any **two** prime numbers is .... (the largest number or the smaller number or the product of the two numbers or the sum of the two numbers)
10. The least common multiple of **two** numbers, one of which is a factor of the other is .... (the largest number or the smaller number or the product of the two numbers or the sum of the two numbers)

Assessment on Lessons 8&9

First: **Choose the correct answer:**

1. .... is a multiple of **8**.
   (a) 2 (b) 4 (c) 16 (d) 6
2. **24** is a multiple of ....
   (a) 16 (b) 14 (c) 8 (d) 9
3. The **common multiple** of all numbers is ....
   (a) 0 (b) 1 (c) 2 (d) 3
4. The LCM of **8** and **4** is ....
   (a) 4 (b) 8 (c) 16 (d) 12
5. The LCM of **3** and 5 is ....
   (a) 8 (b) 15 (c) 30 (d) 45

Second: **Use the following words to complete:**
(Prime, factor, One, composite number, multiples)

1. A .... is a number with more than one set of factor pairs.
2. A .... is a number that is multiplied by another number to get a product.
3. Skip counting is a way to find the .... of a number.
4. .... is a factor of all numbers.
5. A .... number's only factor pair is one and itself.

Third: **Find the GCF and LCM for each of the following:**

1. **8, 16**
   8 = ...
   16 = ...
   GCF = ... = ...
   LCM = ... = ...

2. **15, 20**
   15 = ...
   20 = ...
   GCF = ... = ...
   LCM = ... = ...

Fourth: **Find the LCM for the numbers 6, 8, and 12.**

1. The multiples of **6** are: .... , ... , ... , ... , ... , ... , ... , ... , ...
2. The multiples of **8** are: .... , ... , ... , ... , ... , ... , ...
3. The multiples of **12** are: .... , ... , ... , ...
4. The **common multiples** are: ....
5. **LCM** = ...

Exercises on Lesson 10

Factors or Multiples?

1 Find the GCF and LCM for each of the following:

1 12, 8

GCF = ……………… .

LCM = ……………… .

2 6, 9

GCF = ……………… .

LCM = ……………… .

3 16, 20

GCF = ……………… .

LCM = ……………… .

4 14, 21

GCF = ……………… .

LCM = ……………… .

5 6, 15



GCF = ……………… .

LCM = ……………… .

6 24, 16

GCF = ……………… .

LCM = ……………… .

7 45, 30

GCF = ……………… .

LCM = ……………… .

8 25, 15

GCF = ……………… .

LCM = ……………… .

2 Answer the following:

1. Mohamed trains to lift weights every 4 days and trains for tennis every 6 days. After how many days will Mohamed play tennis and lift weights on the same day?

   ....

   ....

   ....

   ....

2. Omnia has two strips of fabrics. One is 45 centimeters wide, and the other is 75 cm wide. She wants to cut both pieces into strips of equal width that are as wide as possible. How wide should she cut the strips?

   ....

   ....

   ....

   ....

3. Ola sells baskets of figs each holding 9. She also sells bags of pomegranates, each holding 7. If she sells the same number of each, what is the smallest quantity of each type of fruit that she sold?

   ....

   ....

   ....

   ....

4. Two alarms, one of which rings regularly every two hours, and the other rings regularly every 3 hours. If the two alarms rang together at 12 o'clock, at what hour did they ring together for the first time after that?

   ....

   ....

   ....

   ....

5 A dealer has 18 kg of oranges and 27 kg of apples. If the dealer wants to divide the oranges and apples into bags of the same mass. What is the largest number of bags for each type of fruit to have bag with the same masses? How many kilograms of oranges will each bag contain? How many kilograms of apples will each bag contain?

....

....

....

....

6 A hospital has 12 doctors, and 28 nurses. Find the largest number of equal groups that can be formed of both doctors and nurses. How many doctors are in each group? What is the number of nurses in each group?

....

....

....

....

7 Mahmoud wanted to divide 24 pens and 36 notebooks into groups, so that each group contains the same number of tools. What is the largest number of groups that can be formed for each type of tool, so that each group has the same number?

....

....

....

....

8 Adel goes to the club every 3 days to train for football, and his friend Ahmed goes to the same club every 4 days to train for volleyball. After how many days do the two friends meet?

....

....

....

....

Assessment on Lesson 10

First: Choose the correct answer:

1 The GCF for 12 and 18 is ....

ⓐ 2 ⓑ 3 ⓒ 6 ⓓ 9

2 The LCM for 6 and 8 is ....

ⓐ 2 ⓑ 24 ⓒ 48 ⓓ 14

3 The number of factors of 24 is ....

ⓐ 8 ⓑ 6 ⓒ 3 ⓓ 12

4 Which of the following is a multiple of 12?

ⓐ 6 ⓑ 3 ⓒ 12 ⓓ 4

5 Which of the following is a common multiple of 9 and 6?

ⓐ 3 ⓑ 12 ⓒ 27 ⓓ 18

Second: Complete the following sentences:

1 The factors of 27 are ....

2 The multiples of 6 between 20 and 30 are ....

3 The prime factors of 27 are ....

4 The greatest common factor of 18 and 12 is ....

5 The LCM of 12 and 8 is ....

Third: Answer the following:

1 Menna is giving her friends pencils and erasers. The store sells pencils in boxes of 8 and erasers in boxes of 10. If Menna wants the same number of each, what is the minimum number of pencils that she will have to buy?

....

....

2 Nour is making snack bags for an upcoming trip. He has 6 oranges and 12 pieces of dried fruit. He wants the snack bags to be identical without any food left over. What is the greatest number of snack bags that Nour can make?

....

....

Assessment on Concept 2

First: Choose the correct answer:

1 The .... number has only **two** factors.
- a prime
- b composite
- c even
- d odd

2 **1, 2, 5** and **10** are factors of ....
- a 1
- b 5
- c 10
- d 18

3 .... is a common multiple of **10** and **5**.
- a 20
- b 15
- c 5
- d 24

4 All the following numbers are multiples of **8**, except ....
- a 16
- b 24
- c 32
- d 36

5 The greatest common factor of **12** and **6** is ....
- a 2
- b 3
- c 6
- d 12

Second: Complete the following sentences:

1 .... is a common factor of all numbers.

2 **40, 25, 15** are multiples of the number ....

3 .... is a common multiple of all numbers.

4 The LCM of **15** and **30** is ....

5 If **40 = 5 x 8**, then .... is a multiple of the two numbers .... and ....

Third: Put (✓) for the correct statement and (✗) for the wrong statement:

1 **2** is an odd prime number. (   )

2 The GCF for the numbers **2** and **3** is **3**. (   )

3 The prime factors of **18** are 1, 2, 3, 6, 9, 18. (   )

4 **14** is the LCM of **2** and **14**. (   )

5 0 and 7 are the multiples of **7**. (   )

Fourth: Answer the following:

Sameh wanted to divide **21** pens and **35** notebooks into groups, so that each group contains the same number of tools. What is the largest number of groups that can be formed for each type of tool?
How many pens are in each group? How many notebooks are in each group?

....

....

Unit 3

Multiplication with Whole Numbers

Concept

3.1 Models for Multiplication

Exercises on Lessons 1 & 2

The Power of Ten & Using the Area Model to Multiply

1 Complete the following:

1. 4 X 10 = ...
2. 5 X 10 = ...
3. 8 X 100 = ...
4. 9 X 100 = ...
5. 2 X 1,000 = ...
6. 6 X 10,000 = ...
7. .... X 10 = 30
8. .... X 10 = 70
9. .... X 100 = 400
10. .... X 100 = 200
11. .... X1,000 = 7,000
12. .... X 100,000 = 500,000
13. 8 X .... = 80
14. 2 X .... = 20
15. 3 X .... = 300
16. 7X .... = 7,000
17. 1 X .... = 100,000
18. 5 X .... = 50,000

2 Multiply using the area model:

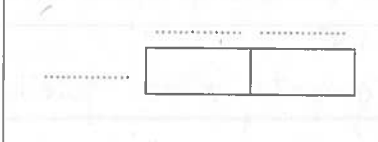
1. 5 X 24 = ...

....

.... | | |

....

2. 9 X 385 = ...



3. 842 X 6 = ...

....

.... | | | |

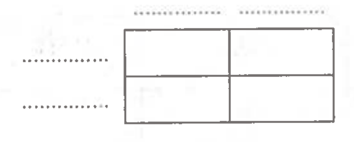
....

4 $4 \times 217 =$ ....

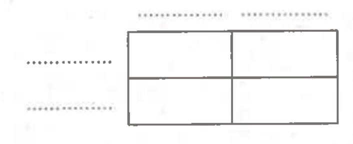
5 $23 \times 18 =$ ....

6 $43 \times 54 =$ ....

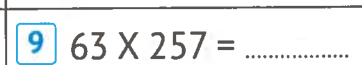
7 $42 \times 102 =$ ....



8 $89 \times 450 =$ ....

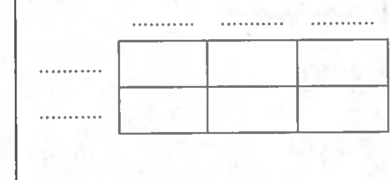


9 $63 \times 257 =$ ....

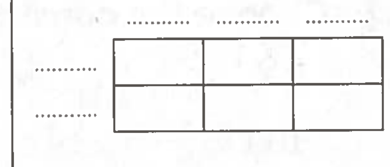


10 $28 \times 134 =$ ....

11 $325 \times 12 =$ ....



12 $275 \times 45 =$ ....



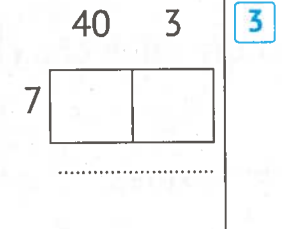
3 **Write the multiplication problem that expresses the following models, and then solve it:**

1 80 6 / 5

....

....

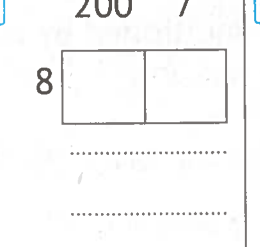
2 40 3 / 7



....

....

3 200 7 / 8



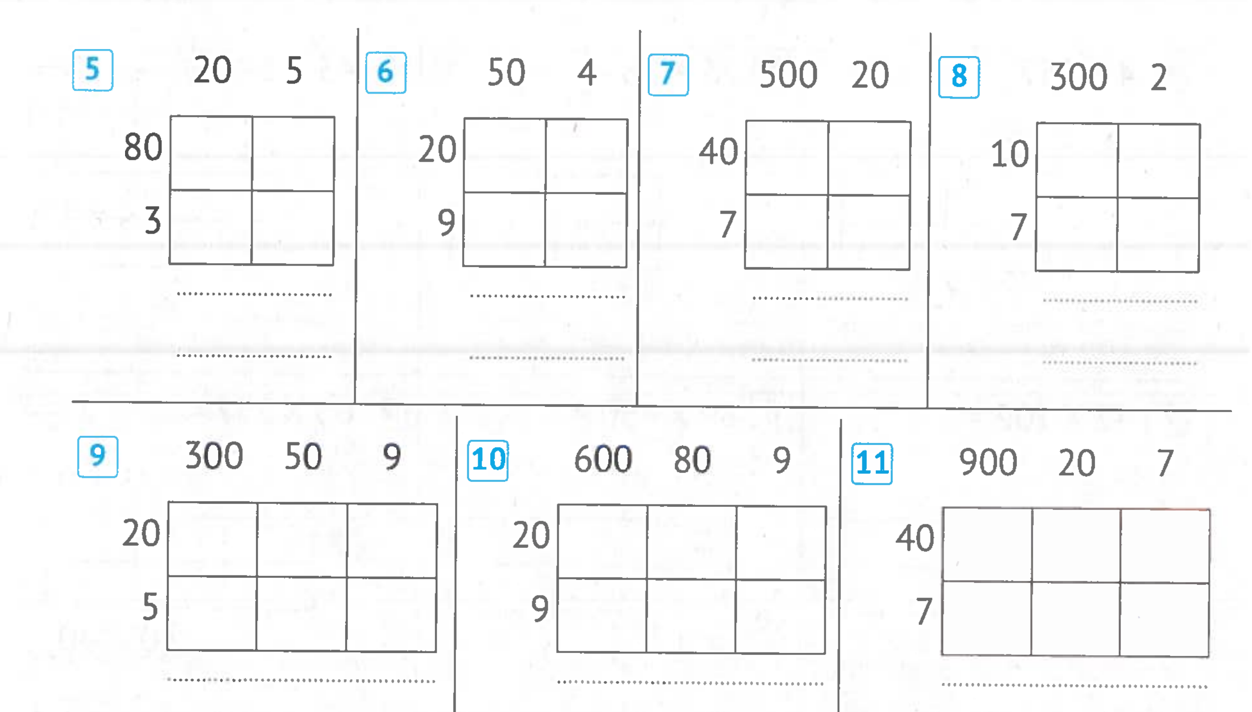
....

....

4 400 50 7 / 9

....

....

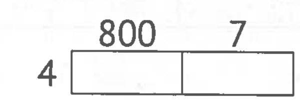


4 Choose the correct answer:

1. 8 X .... = 8,000 (10 or 100 or 1,000 or 0.001)
2. 100 X .... = 700 (7 or 70 or 700 or 7,000)
3. 6 X 10,000 = ... (600,000 or 60,000 or 6,000 or 600)
4. 5 kg = ... gm. (50 or 500 or 5,000 or 0.005)
5. 5 X 100 ◯ 4 X 1,000 (> or = or < or ≤)
6. 2 X 10,000 ◯ 9 X 1,000 (> or = or < or ≤)
7. When 8.67 is multiplied by 10, the value of 6 changes to ....
   (0.06 or 0.6 or 6 or 60)
8. The multiplication problem that expresses the corresponding area model is ....

5	500	400	15

   (5 X 915 or 5 X 183 or 143 or 5 X 12)
9. The multiplication problem that expresses the corresponding model is ....



   (4 X 870 or 4 X 807 or 4 X 780 or 4 X 708)

10 The multiplication problem that expresses the corresponding area model is ....

	30	6
20		
7		

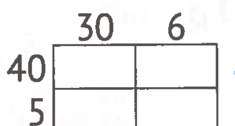
(36 X 27 or 63 X 72 or 207 X 306 or 26 X 37)

11 The multiplication problem that expresses the corresponding area model is ....

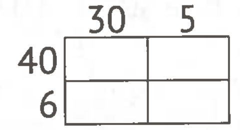
	300	70	5
10			
9			

(19 X 15 or 19 X 312 or 19 X 375 or 573 X 91)

12 The area model that represents 45 x 36 is ....



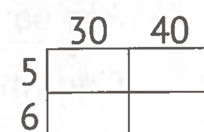




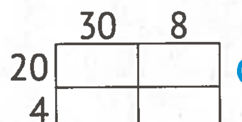


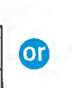
	3	6
4		
6		

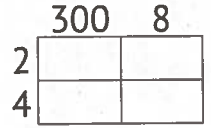
or



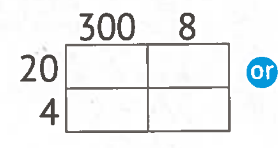
13 The area model that represents 24 X 308 is ....

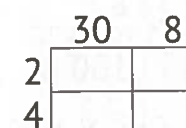












14 The area model that represents 67 X 174 is ....

	1	7	4
60			
7			

or

	10	70	40
60			
7			

or

	100	70	4
60			
7			

or

	100	70	4
60			
7			

15 The multiplication problem that expresses the corresponding area model is ....

600	90
40	6

(690 X 46 or 640 X 96 or 23 X 32 or 203 X 32)

5 Answer the following:

1. Hazem bought **7** books, the price of each book is **10** pounds.

   Find what Hazem paid.

   ....

   ....

2. Mona saves **100** pounds every month.

   How much does Mona save in **5** months?

   ....

   ....

3. Amr bought **4** suits, the price of one suit is **10,000** pounds.

   Find what Amr paid.

   ....

   ....

4. A box contains **200** balls. How many balls are in **eight** similar boxes?

   ....

   ....

Assessment on Lessons 1&2

First: Choose the correct answer:

1. 5 X .... = 5,000

   (a) 10 (b) 100 (c) 1,000 (d) 10,000

2. 8 X 1,000 ( ) 20 X 40

   (a) < (b) = (c) > (d) ≥

3. 8,000 = ...

   (a) 8 X 10 (b) 8 X 100 (c) 8 X 1,000 (d) 8 X 10,000

4. The multiplication problem that expresses the following model is ....

   (a) 24 X 48 (b) 24 X 720

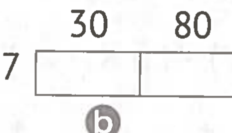
   (c) 24 X 32 (d) 640 X 128

	20	4
	600	120
	40	8

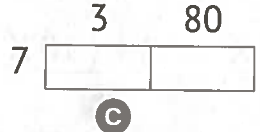
5. The model that expresses the following multiplication problem 7 X 308 is ....

	300	8
7		

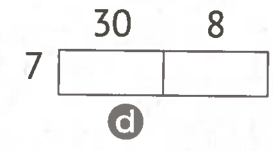
(a)



(b)



(c)



(d)

Second: Complete the following:

1. 1,000 X 3 = ...
2. 100 X .... = 500
3. .... X 9 = 900,000

4.

	40	5
....	1,200	....
....	....	15

5.

	....	5
....	....	350
5	200	....

Third: Match:

1. 4 X 100
2. 4 X 10
3. 4 X 1,000
4. 4 X 100,000
5. 4 X 10,000

(a) 40
(b) 4,000
(c) 400
(d) 40,000
(e) 400,000

Fourth: Answer the following:

Aya ran a **5**-kilometer race on Saturday. If there are **1,000** meters in **1** kilometer, how many meters did she run?

....

Exercises on Lessons 3 & 4

The Distributive Property of Multiplication & Using the Partial Products Model to Multiply

1 Find the product using the **Distributive Property**:

1. 8 X 27 = (8 X ....) + (8 X ....) = ... + ... = ...
2. 6 X 27 = ...
3. 7 X 306 = (7 X ....) + (7 X ....) = ... + ... = ...
4. 9 X 283 = ...
5. 15 X 79 = (10 + 5) X (70 + 9)
   = (10 X ....) + (10 X ....) + (5 X ....) + (5 X ....)
   = ... + ... + ... + ... = ...
6. 23 X 68 = ...
   = ...
   = ...
7. 24 X 624 = (.......... + ...) X (.......... + ... + ...)
   = ...
   = ...

2 Solve using the **area model**:

1.

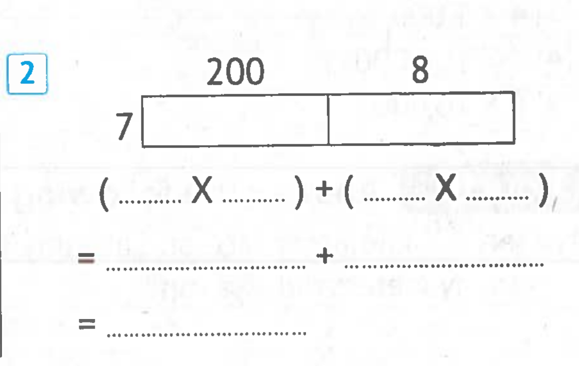
	40	5
8		

(.......... X ....) + (.......... X ....)

= .... + ...

= ....

2.



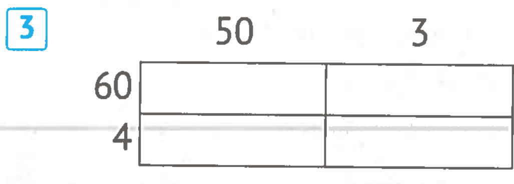
	200	8
7		

(.......... X ....) + (.......... X ....)

= .... + ...

= ....

3



(.... X ....) + (.... X ....) + (.... X ....) + (.... X ....)

= .... + ... + ... + ...

= ....

4

40 7

10

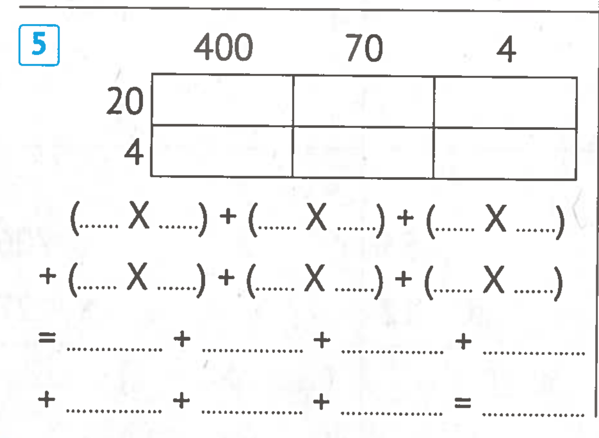
3

(.... X ....) + (.... X ....) + (.... X ....) + (.... X ....)

= .... + ... + ... + ...

= ....

5



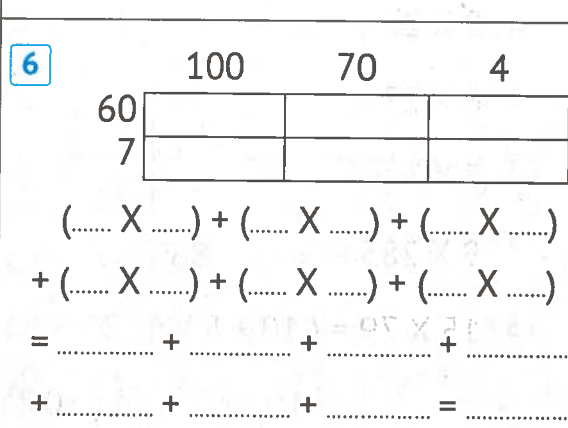
(....... X ....) + (....... X ....) + (....... X ....)

\+ (....... X ....) + (....... X ....) + (....... X ....)

= .... + ... + ... + ...

\+ .... + ... + ... = ...

6



(....... X ....) + (....... X ....) + (....... X ....)

\+ (....... X ....) + (....... X ....) + (....... X ....)

= .... + ... + ... + ...

\+ .... + ... + ... = ...

3 Solve using the **area model**:

1

....

....

(8 X 20) + (8 X 7)

= ....

2

....

....

(9 X 600) + (9 X 7)

= ....

3

....

....

....

(40 X 70) + (40 X 3) + (6 X 70) + (6 X 3)

= ....

4

....

....

....

(20 X 100) + (20 X 7) + (3 X 100) + (3 X 7)

= ....

5

....

....

....

(20 X 500) + (20 X 80) + (20 X 4)

\+ (4 X 500) + (4 X 80) + (4 X 4)

= ....

6

....

....

....

(60 X 200) + (60 X 80) + (60 X 3)

\+ (4 X 200) + (4 X 80) + (4 X 3)

= ....

4 Find the product using the partial products strategy:

1

37
X 8

(.......... X ....) ....
(.......... X ....) + ...
....

2

65
X 9

(.......... X ....) ....
(.......... X ....) + ...
....

3

903
X 5

(.......... X ....) ....
(.......... X ....) + ...
....

4

86
X 32

(.......... X ....) ....
(.......... X ....) + ...
(.......... X ....) + ...
(.......... X ....) + ...
....

5

53
X 12

(.......... X ....) ....
(.......... X ....) + ...
(.......... X ....) + ...
(.......... X ....) + ...
....

6

706
X 27

(.......... X ....) ....
(.......... X ....) + ...
(.......... X ....) + ...
(.......... X ....) + ...
....

7

549
X 23

(.......... X ....) ....
(.......... X ....) + ...
(.......... X ....) + ...
(.......... X ....) + ...
(.......... X ....) + ...
(.......... X ....) + ...
....

8

638
X 12

(.......... X ....) ....
(.......... X ....) + ...
(.......... X ....) + ...
(.......... X ....) + ...
(.......... X ....) + ...
(.......... X ....) + ...
....

9

347
X 34

(.......... X ....) ....
(.......... X ....) + ...
(.......... X ....) + ...
(.......... X ....) + ...
(.......... X ....) + ...
(.......... X ....) + ...
....

5 Using the rectangle model, find the result of 74 x 12. Divide the numbers in three different ways:

1. 45 X 27 = ... ⓐ ☐ ⓑ ☐ ⓒ ☐

2. 73 X 15 = ... ⓐ ☐ ⓑ ☐ ⓒ ☐

3. 21 X 479 = ... ⓐ ☐ ⓑ ☐  ☐

4. 38 X 208 = ... ⓐ ☐   ☐  ☐

6 Complete the following:

1. 178 X 8 = 8 X (.................... + ... + ...)

2. 6 X (200 + 30 + 7) = ... X ....

3. 45 X 36 = (.................... + ...) X (.................... + ...)

4. 72 X 15
   = (70 X ....) + (70 X ....) + (2 X ....) + (2 X ....)

5. (30 X 500) + (30 X 20) + (7 X 500) + (7 X 20) = ... X ....

6.

	....	....
30	600	....
7	....	35

7.

	....	3
....	8,000	....
4	800	....

8. (30 X 500) + (30 X 20) + (7 X 500) + (7 X 20) = ... X ....

9

	....
	X ....
(5 X 6)	....
(5 X 30)	+ ....
(20 X 6)	+ ....
(20 X 30)	+ ....
	....

10

	95
	X 43
(......... X ....)	....
(......... X ....)	+ ....
(......... X ....)	+ ....
(......... X ....)	+ ....
	....

11

	802
	X ....
(7 X ....)	....
(7 X ....)	+ ....
(40 X ....)	+ ....
(40 X ....)	+ ....
	....

7 Choose the correct answer:

1. 5 X (600 + 2) = ...   (5 X 8 or 5 X 62 or 5 X 602 or 5 X 6,002)

2. 8 X 420 = 8 X (................)   (4 + 20 or + 20 or 400 + 2 or 400 + 20)

3. 12 X 200 + 12 X 30 + 12 X 5 = 12 X ....   (12 or 205 or 230 or 235)

4. 56 X 93 = ...

   ((50+6) X (90+3) or (50X6) + (90X3) or (50+6) + (90+3) or (5+6) X (9+3))

5. (80X50) + (80X7) + (3X50) + (3X 7) = ...

   (85 X 37 or 83 X 57 or 87 X 35 or 78 X 35)

6. The multiplication problem that expresses the corresponding area model is ....

2,500	300
300	36

   (56 X 56 or 25 X 36 or 65 X 65 or 300 X 36)

7. The multiplication problem that expresses the corresponding area model is ....

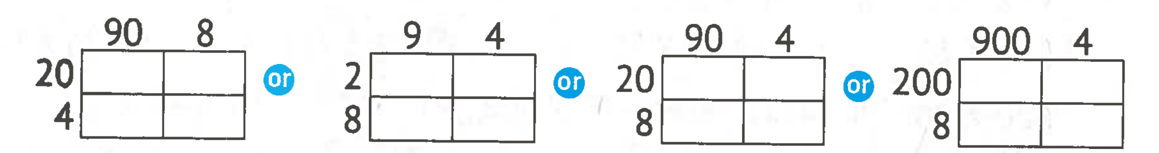
	200	7
40		
8		

   (48 X 270 or 48 X 27 or 48 X 207 or 48 X 9)

8 The area model that represents (8X 200) + (8 X 6) is ....

8 × [200 | 6] or 8 × [20 | 6] or 8 × [200 | 60] or 8 × [20 | 60]

9 The area model that represents (20 + 8) X (90 + 4) is ....



10 The area model that represents

(50 X 70) + (50 X 3) + (4 X 70) + (4 X 3) is ....

[50, 70] × [4 | 3] or [50, 4] × [70 | 3] or [50, 3] × [70 | 4] or [5, 4] × [7 | 3]

Assessment on Lessons 3&4

First: Choose the correct answer:

1. 7 X (500 + 4) = ...
   - ⓐ 7 X 54
   - ⓑ 7 X 504
   - ⓒ 7 X 5,004
   - ⓓ 7 X 9

2. (60 X 20) + (60 X 3) + (7 X 20) + (7 X 3) = ...
   - ⓐ 67 X 23
   - ⓑ 62 X 73
   - ⓒ 63 X 27
   - ⓓ 76 X 32

3. The area model that represents (2 X 500) + (2 X 20) + (2 X 4) is ....
   - ⓐ 2 by (500 | 20 | 4)
   - ⓑ 2 by (5 | 2 | 4)
   - ⓒ 2 by (50 | 2 | 4)
   - ⓓ 2 by (50 | 20 | 4)

4. The problem that represents the opposite area model is ....
   (Area model: 4 by (600 | 9))
   - ⓐ 4 X (6 + 9)
   - ⓑ 4 X (60 + 9)
   - ⓒ 4 X (600 + 9)
   - ⓓ 4 X (60 + 90)

5. 15 X 56 = 15 X (............ + ...)
   - ⓐ 50 + 6
   - ⓑ 5 + 6
   - ⓒ 50 + 60
   - ⓓ 5 + 60

Second: Complete the following:

1. 7,480 X 7 = 7 X (............ + ... + ...) = ...
2. 23 X 46 = (20 X ....) + (20 X ....) + (3 X ....) + (3 X ....)
3. .... X .... = (20 X 500) + (20 X 6) + (4 X 500) + (4 X 6)
4. 3 X .... = 3 X (6,000 + 200 + 30)
5. 2 X 505 = (2 X ....) + (2 X ....)

Third: Multiply using the following partial products models:

1.
```
                          89
                   X       2
                   ---------
( ....... X ....... )  .......
( ....... X ....... ) + .......
                   ---------
                       .......
```

2.
```
                          45
                   X      37
                   ---------
( ....... X ....... )  .......
( ....... X ....... ) + .......
( ....... X ....... ) + .......
( ....... X ....... ) + .......
                   ---------
                       .......
```

3.
```
                         627
                   X      43
                   ---------
( ....... X ....... )  .......
( ....... X ....... ) + .......
( ....... X ....... ) + .......
( ....... X ....... ) + .......
( ....... X ....... ) + .......
( ....... X ....... ) + .......
                   ---------
                       .......
```

Assessment on Concept 1

First: Choose the correct answer:

1. 5 X 1,000 = ...

   a 50 b 500 c 5,000 d 50,000

2. 25 X 80 = ...

   a 2 X 10,000 b 2 X 1,000 c 2 X 100 d 2 x 10

3. The area model that represents (9X 200) + (9 X 40) + (9 X 5) is ....

   a) columns 200, 40, 5; row 9
   b) columns 2, 4, 5; row 9
   c) columns 20, 4, 5; row 9
   d) columns 20, 40, 5; row 9

4. The multiplication problem that the opposite model represents is ....

   (Area model: columns 60, 9; rows 40, 2)

   a 46 X 29 b 49 X 62
   c 42 X 69 d 26 X 94

5. The multiplication problem that the opposite model represents is ....

3,000	20
600	4

   a 12 X 32 b 12 X 302
   c 102 X 302 d 102 X 32

Second: Complete the following:

1. 8 X .... = 80,000
2. 1,000 X .... = 7,000
3. .... X .... = (10 X 50) + (10 X 7) + (2 X 50) + (2 X 7)
4. 9 X .... = 9 × (600 + 20 + 3)
5. 7 X 903 = (7 X ....) + (7 X ....)

Third: Solve the following problems using the mentioned strategy:

1. 2 X 47 (Distributive Property)

   ....
   ....
   ....

2. 82 X 15 (Partial Products)

   ....
   ....
   ....

3. 14 X 23 (Area Model)

   ....
   ....
   ....

Fourth: Answer the following:

Omar owns **12** buses to transport tourists, each bus can carry **25** passengers. How many passengers can Omar carry each day if each bus is full?

....

Concept

3.2 Multiplying 4-Digit Numbers by 2-Digit Numbers

Exercises on Lessons 5 - 7

What Is an Algorithm?, Multiplying Multi-Digit Numbers & Multiplication Problems in the Real World

1 **Find the product using the standard algorithm for multiplication:**

1. 82 X 4 = ...
2. 608 X 9 = ...
3. 264 X 7 = ...
4. 9324 X 8 = ...
5. 39 X 25 = ... + ... = ...
6. 75 X 36 = ... + ... = ...
7. 306 X 18 = ... + ... = ...
8. 617 X 54 = ... + ... = ...
9. 4,107 X 36 = ... + ... = ...
10. 6,073 X 48 = ... + ... = ...
11. 8,347 X 76 = ... + ... = ...
12. 9,678 X 32 = ... + ... = ...

2 Find the product using the area model:

1 9,532 X 12 = ...

	....	....	....	....
....	....	....	....	....
....	....	....	....	....

2 6,324 X 25 = ...

	....	....	....	....
....	....	....	....	....
....	....	....	....	....

3 3,214 X 37 = ...

	....	....	....	....
....	....	....	....	....
....	....	....	....	....

4 6,312 X 72 = ...

	....	....	....	....
....	....	....	....	....
....	....	....	....	....

5 9,231 X 28 = ...

	....	....	....	....
....	....	....	....	....
....	....	....	....	....

6 6,324 X 37 = ...

	....	....	....	....
....	....	....	....	....
....	....	....	....	....

3 Find the product using the partial products model:

1

7,526
X 42

(............ X ....) ....
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...

....

2

4,231
X 36

(............ X ....) ....
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...

....

3

$$\begin{array}{r} 5,324 \\ \times \quad 27 \\ \hline \end{array}$$

(............ X ....) ....
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
....

4

$$\begin{array}{r} 3,294 \\ \times \quad 53 \\ \hline \end{array}$$

(............ X ....) ....
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
....

4 Estimate the product of the multiplication, and then find the actual product. Use the strategy you prefer:

1 7,325 X 12

Estimate: ....

Actual product: ....

The strategy used: ....

2 4,537 X 37

Estimate: ....

Actual product: ....

The strategy used: ....

3 2,314 X 14

Estimate: ....

Actual product: ....

The strategy used: ....

4 6,324 X 34

Estimate: ....

Actual product: ....

The strategy used: ....

5 Answer the following:

1 Each river bus can carry 22 passengers at a time.
What is the maximum number of passengers that the river bus can carry during 25 trips?

....

2 A rectangular piece of land has a length of 256 meters, and a width of 62 meters. Find its area.

....

3 Khaled bought 34 meters of cloth, the price of one meter was 9,560 piasters. What is the price of the cloth that Khaled bought?

....

4 A bus is 1,285 centimeters long. How long are 21 buses?

....

5 Marwan bought a car, and agreed with the owner of the car showroom to pay for it in 12 equal installments, the value of each installment is 9,865 pounds. What is the price of the car?

....

6 Mona saves 1,023 pounds every month. What is the total amount that Mona saves in 18 months?

....

7 16 persons participated in an exhibition, and each won 8,234 pounds. How much did they all win?

....

8 A bag of fruit has a mass of 2,445 grams. What is the mass of 45 similar bags?

....

Assessment on Concept 2

First: **Choose the correct answer:**

1 The problem that represents the opposite area model is ....

	5,000	400	3
60			
7			

ⓐ 5,403 X 67 ⓑ 5,043 X 67
ⓒ 5,430 X 67 ⓓ 543 X 67

2 The problem that represents the opposite area model is ....

120,000	2,000	80
9,000	150	6

ⓐ 3,502 X 43 ⓑ 3,052 X 43
ⓒ 3,520 X 43 ⓓ 352 X 43

3 The model that represents 6,350 X 73 is ....

ⓐ

	6,000	300	50
70			
3			

ⓑ

	6,000	300	5
70			
3			

ⓒ

	6,000	30	5
70			
3			

ⓓ

	600	30	5
70			
3			

4 3,006 X 25 = ...

ⓐ 21,042 ⓑ 90,000 ⓒ 7,650 ⓓ 75,150

5 2,300 X 30 = ...

ⓐ 69,000 ⓑ 6,900 ⓒ 60,900 ⓓ 96,000

Second: **Solve the following problems using the mentioned strategy:**

1 5,080 X 23 (Distributive Property)

....
....
....
....

2 9,007 X 64 (Partial Products)

....
....
....
....

3 2,125 X 74 (Area Model)

....
....
....
....

Third: **Answer the following:**

– Huda bought **18** kg of bananas, the price of a kilogram was **15** pounds, and she bought **18** kilograms of mangoes, the price of a kilogram was **25** pounds. What is the total amount that Huda paid?

....

Theme 2

lathematical perations nd Algebraic hinking



Units of the Theme

Unit 4 Division with Whole Numbers

Concept 4.1: Models for Division

Concept 4.2: Dividing by 2-Digit Divisors

Unit 5 Multiplication and Division with Decimals

Concept 5.1: Multiplying Decimals

Concept 5.2: Dividing Decimals



Unit 6 Numerical Expressions and Patterns

Concept 6.1: Evaluating Numerical Expressions

Concept 6.2: Analyzing Numerical Patterns



Division with Whole Numbers

Concept

4.1 | Models for Division

Exercises on Lessons 1 & 2

Understanding Division & Using the Area Model to Divide

1 Answer the following:

1. A teacher has 96 books and wants to distribute them equally among 4 students. How many books will each student get?

   ....

2. Hazem bought 7 books. The price of each book is 23 pounds. What did Hazem pay?

   ....

3. Emad puts 85 cups in boxes, so that each box can accommodate 5 cups. How many boxes are needed for that?

   ....

4. Samah bought 76 sweets and distributed them equally among 6 of her friends. How many pieces will each friend get? Will there be pieces of sweets left with Samah?

   ....

5. Mona saves 35 pounds every month. How much does Mona save in 5 months?

   ....

6 Eman bought 8 books of the same kind for 144 pounds. What is the price of one book?

....

7 A box has 256 balls. How many balls are in eight identical boxes?

....

8 What is the number that if divided by 6, the result is 27?

....

9 What is the number that if divided by 7, the result is 42 and the remainder is 4?

....

10 If the quotient is 5, the divisor is 4 and the remainder is 2, what is the value of the dividend?

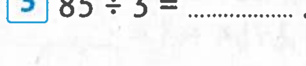
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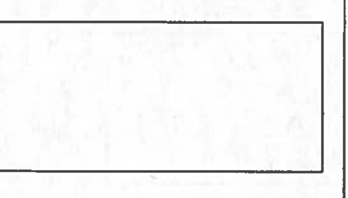
2 Divide using the area model:

1 $96 \div 4 =$ ....

2 $87 \div 5 =$ ....

3 $85 \div 3 =$ ....





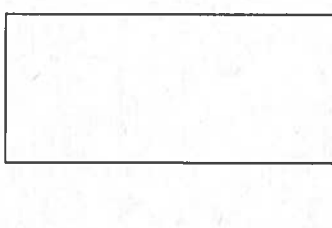
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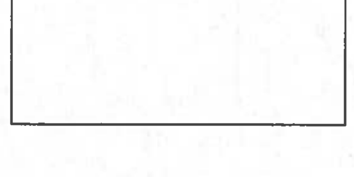
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4 $465 \div 5 =$ ....

5 $378 \div 6 =$ ....

6 $358 \div 4 =$ ....





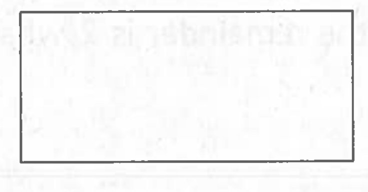
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....



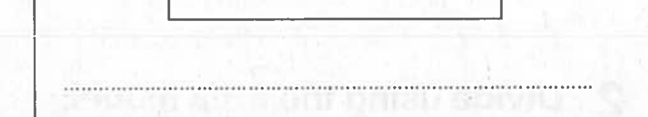
7 946 ÷ 2 = ...

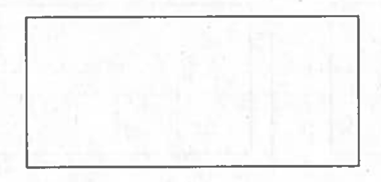
8 861 ÷ 7 = ...



9 898 ÷ 8 = ...

10 1,378 ÷ 2 = ...

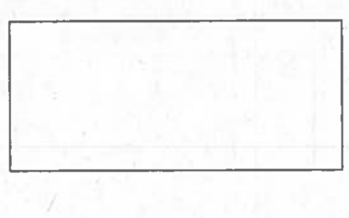




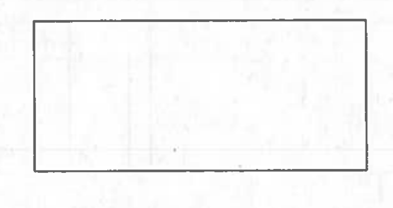
11 2,754 ÷ 3 = ...

12 3,846 ÷ 5 = ...

13 8,444 ÷ 6 = ...



14 7,452 ÷ 6 = ...

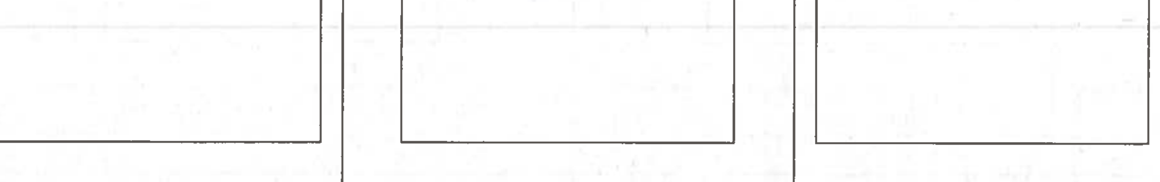


3 Divide using the area model:

1 705 ÷ 15 = ...

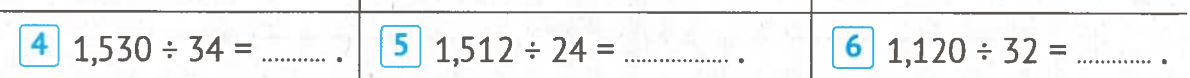
2 882 ÷ 13 = ...

3 714 ÷ 21 = ...



....

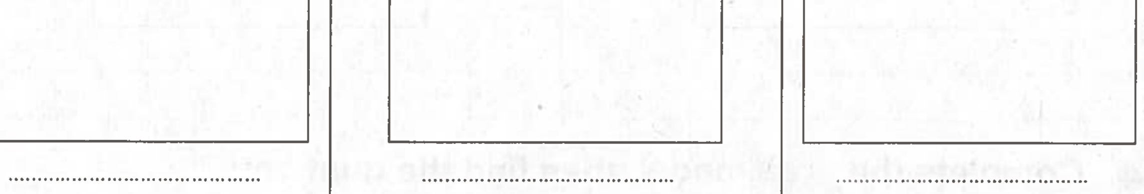
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4 1,530 ÷ 34 = ...

5 1,512 ÷ 24 = ...

6 1,120 ÷ 32 = ...

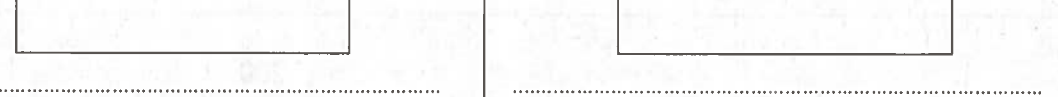


....

....



7 7,584 ÷ 32 = ...

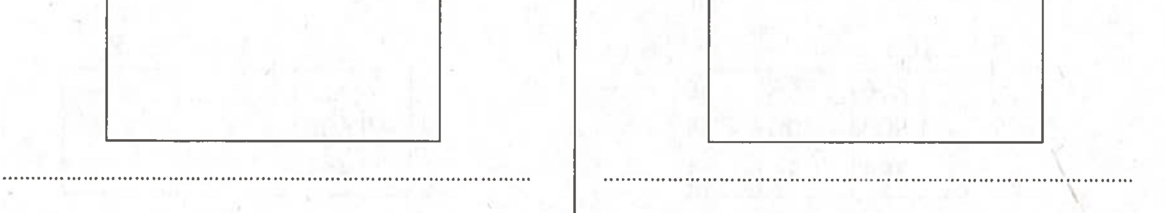


....

....

8 7,175 ÷ 35 = ...

9 16,779 ÷ 47 = ...



....

....

10 $32{,}144 \div 82 =$ ....

....

....

11 $23{,}595 \div 39 =$ ....

....

....

12 $67{,}814 \div 41 =$ ....

....

....

13 $64{,}158 \div 52 =$ ....

....

....

4 Complete the area model, then find the quotient:

1

	20	8
23	552 –	.... – ....

.... ÷ .... = ...

2

	60	3
24	1,522 –	.... – ....

.... ÷ .... = ...

3

	....	....
45	4,635 – 4,500 135	135 – 135 000

.... ÷ .... = ...

4

	200	....	....
32	7,776 –	.... –	.... – ....

.... ÷ .... = ...

5

	100	....	....
....	1,856 – 1,500 356	356 – 300 56	56 – 45 11

.... ÷ .... = ...

6

	....	10	3
32	.... – 9,600 416	.... –	.... – ....

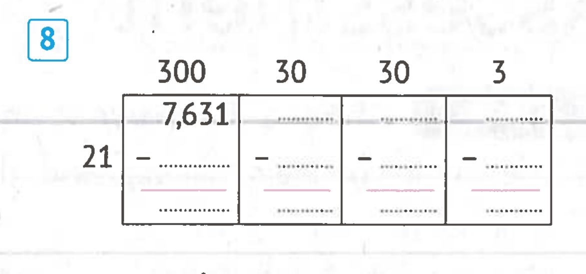
.... ÷ .... = ...

7

	100	100	40	5
35	8,575 –	.... –	.... –	.... – ....

.... ÷ .... = ...

8



	300	30	30	3
21	7,631 –	.... –	.... –	.... – ....

.... ÷ .... = ...

5 Complete the area model, then complete the table:

	Area Model	Dividend	Divisor	Quotient	Remainder
1	.... | .... – .... | .... – .... | .... – .... | .... –	56,160	45	....	....
2	200 300 40 2 31 | 16,817 – .... | .... – .... | .... – .... | .... –	....	....	....	....
3	.... 24 | 53,328 – 48,000 .... | 5,328 – 4,800 .... | 528 – 480 .... | 48 – 48 00	....	....	....	....
4	.... | .... – .... | .... – .... | .... –	....	72	357	12
5	100 100 20 20 42 | .... – .... | .... – .... | .... – .... | .... – 12	....	....	....	....

Assessment on Lessons 1&2

First: Choose the correct answer:

1 The division problem that expresses the opposite model is ....

	200	20	20	5
8	1,960 – 1,600 360	360 – 160 200	200 – 160 40	40 – 40 0

ⓐ 1,960 ÷ 8 = 2,225 ⓑ 360 ÷ 8 = 245
ⓒ 1,960 ÷ 8 = 245 ⓓ 1,960 ÷ 8 = 605

2 The divisor in the corresponding model is ....

	10	6
14	226 – 140 86	86 – 84 2

ⓐ 14 ⓑ 16
ⓒ 226 ⓓ 2

3 The remainder of the division in the opposite model is ....

	300	20	6
12	3,912 – 3,600 312	312 – 240 72	72 – 72 0

ⓐ 12 ⓑ 326
ⓒ 72 ⓓ 0

4 The quotient in the opposite model is ....

	4,000	30	5
63	254,205 – 252,000 220,5	2,205 – 1,890 315	315 – 315 0

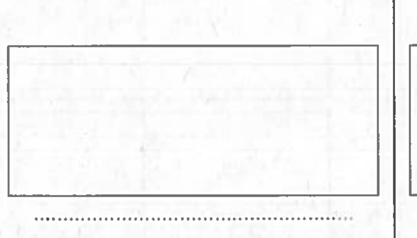
ⓐ 435 ⓑ 4,305
ⓒ 4,350 ⓓ 4,035

5 If 45 x 12 = 540, then the remainder of 545 ÷ 12 is ....

ⓐ 5 ⓑ 12 ⓒ 45 ⓓ 540

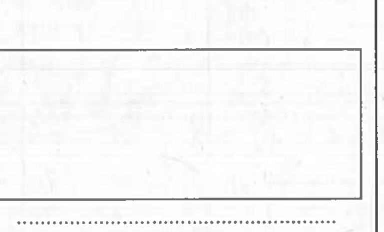
Second: Use the area model to solve the following problems:

1 6,542 ÷ 8



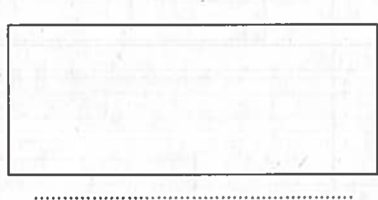
....
....

2 3,634 ÷ 12



....
....

3 144370 ÷ 45



....
....

Third: Answer the following:

1 A red hat costs 400 LE, which is 4 times as much as a blue hat. How much does a blue hat cost? ....

2 There are 138 job applicants for a vacancy. They will need to place the applicants in 6 rooms while they fill out the application. How many people will be in each room? ....

Exercises on Lessons 3 & 4

Using the Partial Quotients Model to Divide & Estimating Quotients

1 Divide using the partial quotients model:

1. 52 ÷ 4 = ...
2. 78 ÷ 6 = ...
3. 385 ÷ 5 = ...
4. 288 ÷9 = ...
5. 893 ÷2 = ...
6. 834 ÷ 3 = ...
7. 985 ÷ 7 = ...
8. 992 ÷ 8 = ...
9. 1,446 ÷ 3 = ...
10. 4,985 ÷ 5 = ...
11. 3,654 ÷ 6 = ...

12 1,446 ÷ 3 = ...

13 4,985 ÷ 5 = ...

14 3,654 ÷ 6 = ...

2 Divide using the partial quotients model:

1 276 ÷ 23 = ...

2 378 ÷ 14 = ...

3 988 ÷ 24 = ...

4 2,400 ÷75 = ...

5 2,523 ÷ 45 = ...

6 1,200 ÷ 48 = ...

7 4,935 ÷ 47 = ...

8 14,552 ÷ 68 = ...

9 15,632 ÷ 45 = ...

10 250,692 ÷ 78 = ...

11 86,580 ÷ 36 = ...

12 240,796 ÷ 74 = ...

3 Complete using the partial quotients model, then find the quotient:

1

8 ⟌ 984
- .... | ....
....
- .... | ....
....
- .... | ....
....

2

.... ⟌ 8,328
- 8,000 | 1,000
328
- 320 | ....
8
- 8 | ....
0

3

45 ⟌ 10,530
- .... | 200
....
- .... | 30
....
- .... | 4
....

4

36 ⟌ ....
- .... | 100
....
- .... | 100
....
- .... | 8
000

5

24 ⟌ 99,180
- 96,000 | 4,000
3,180
- 2,400 | ....
780
- 720 | ....
60
- 48 | ....
12

6

24 ⟌ ....
- .... | 1,000
....
- .... | 1,000
....
- .... | 200
....
- .... | 30
000

7

.... ⟌ ....
- 4,500 | 100
....
- .... | 100
....
- .... | 100
....
- .... | 2
13

8

.... ⟌ ....
- .... | 500
....
- 320 | 10
....
- .... | 10
....
- .... | 2
000

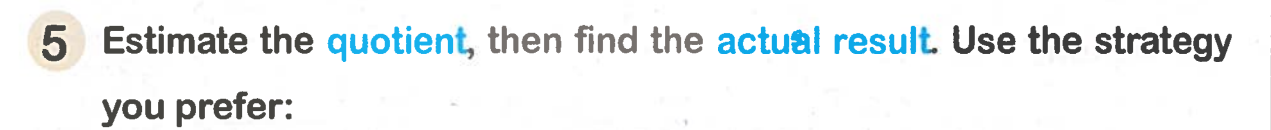
4 Complete using the partial quotients model, then complete the table:

1

	a	b	c
Partial Quotients Model	3 ⟌ 2337 − .... | .... − .... | .... − .... |	42 ⟌ .... − .... | 100 .... − .... | 20 .... − .... | 30 11	.... ⟌ .... − .... | 300 .... − .... | 20 .... − 52 | 1 00
Dividend	....	....	....
Divisor	....	....	....
Quotient	....	....	....
Remainder	....	....	....

2

	a	b	c
Partial Quotients Model	.... ⟌ 75,257 − 65,000 | 1,000 .... − 6,500 | .... − .... | 50 507 − 455 | 7	22 ⟌ .... − .... | 1,000 .... − .... | 200 .... − .... | 200 .... − .... | 7 000	.... ⟌ .... − 260 | 20 .... − .... | 20 .... − .... | 20 .... − .... | 3 0
Dividend	....	....	....
Divisor	....	....	....
Quotient	....	....	....
Remainder	....	....	....



5 Estimate the quotient, then find the actual result. Use the strategy you prefer:

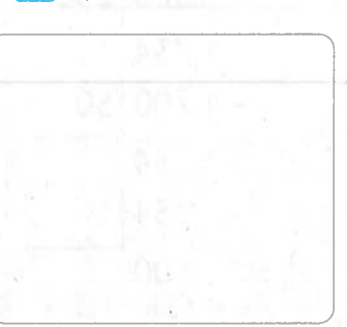
1. 3,248 ÷ 8

Estimate = ...

Solution = ...

2. 6,884 ÷ 6





Estimate = ...

Solution = ...

3. 36,024 ÷ 9

Estimate = ...

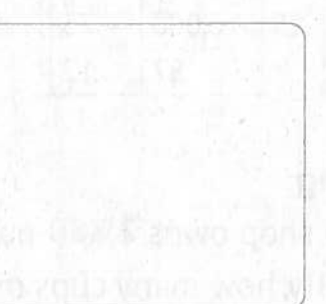
Solution = ...

4. 22,425 ÷ 65

Estimate = ...

Solution = ...

5. 3,892 ÷ 83



Estimate = ...

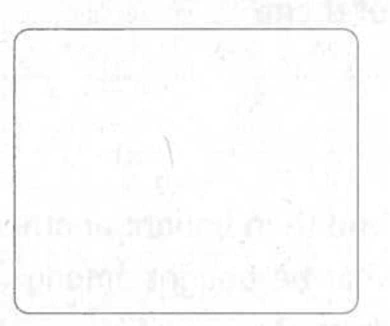
Solution = ...

6. 3,511 ÷ 72

Estimate = ...

Solution = ...

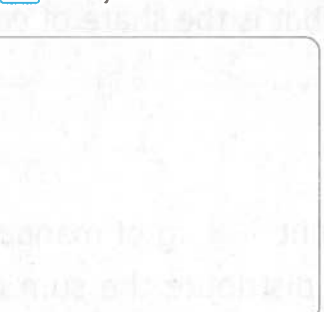
7. 9,888 ÷ 24



Estimate = ...

Solution = ...

8. 107,310 ÷ 42



Estimate = ...

Solution = ...

9. 11,310 ÷ 45

Estimate = ...

Solution = ...

6 Match:

1

$$\begin{array}{r|l} 8 \;)\; 3,648 & \\ - 3,200 & 400 \\ 448 & \\ - 400 & 50 \\ 48 & \\ - 48 & 6 \\ 00 & \end{array}$$

2

$$\begin{array}{r|l} 34 \;)\; 8,534 & \\ - 6,800 & 200 \\ 1,734 & \\ - 1,700 & 50 \\ 34 & \\ - 34 & 1 \\ 00 & \end{array}$$

3

$$\begin{array}{r|l} 15 \;)\; 6,087 & \\ - 3,000 & 200 \\ 3,087 & \\ - 3,000 & 200 \\ 87 & \\ - 75 & 5 \\ 12 & \end{array}$$

a

	200	50	1
	8,534	1,734	34
34	− 6,800	− 1,700	− 34
	1,734	34	00

b

	400	5
	6,087	87
15	− 6,000	− 75
	87	12

c

	200	200	50	6
	3,648	2,048	448	48
8	− 1,600	− 1,600	− 400	− 48
	2,048	448	48	00

7 Answer the following:

1. The owner of a juice shop owns **2,880** paper cups. If he uses them within **12** days equally, how many cups did he use every day?

....

....

2. An association donated **11,250** pounds and it was distributed equally among **45** persons. What is the share of each of them?

....

....

3. A fruit merchant bought **349** kg of mangoes, and then bought another **364** kg. He wants to distribute the sum of what he bought among **3** boxes equally. How many kilograms are in each box?

....

....

Assessment on Lessons 3&4

First: Choose the correct answer:

48	11,232	
	− 9,600	200
	1,632	
	− 1,440	30
	192	
	− 192	4
	0	

1. The quotient in the opposite model is ....
   - (a) 11,232
   - (b) 48
   - (c) 234
   - (d) 0

12	36,514	
	− 36,000	3,000
	514	
	− 480	40
	34	
	− 24	2
	10	

2. The remainder of division in the opposite model is ....
   - (a) 36,514
   - (b) 12
   - (c) 3,042
   - (d) 10

65	8,060	
	− 6,500	100
	1,560	
	− 1,300	20
	260	
	− 260	4
	0	

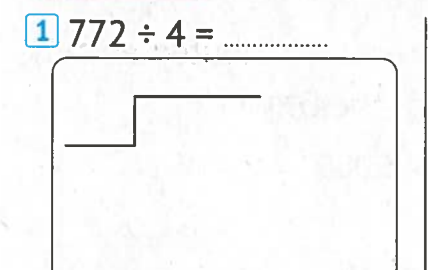
3. The dividend in the opposite model is ....
   - (a) 8,060
   - (b) 65
   - (c) 124
   - (d) 260

4. 800 X 30 = ...
   - (a) 240,000 (b) 24,000 (c) 2,400 (d) 240

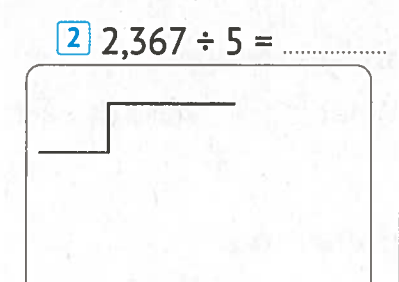
5. 500 X .... = 400,000
   - (a) 800 (b) 8,000 (c) 80,000 (d) 800,000

Second: Divide using the partial quotients model:

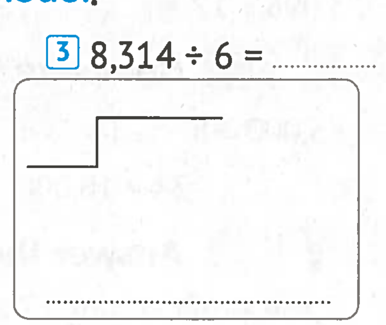
1. 772 ÷ 4 = ...



2. 2,367 ÷ 5 = ...



3. 8,314 ÷ 6 = ...



Third: Answer the following:

Adel bought a car for 69,380 pounds and paid 65,940 pounds of its price, then he paid the rest of its price over four months equally.

What is the value of the monthly installment?

....

Assessment on Concept 1

First: Choose the correct answer :

1. The quotient in the opposite model is ....

	100	20	20	6
24	3,504 − 2,400 = 1,104	1,104 − 480 = 624	624 − 480 = 144	144 − 144 = 0

ⓐ 1,226 ⓑ 24 ⓒ 3,504 ⓓ 146

2. The divisor in the opposite model is ....

```
23 | 5,635
   − 4,600 | 200
     1,035
   −   920 | 40
       115
   −   115 | 5
         0
```

ⓐ 5,635 ⓑ 23 ⓒ 245 ⓓ 0

3. The remainder of division in the opposite model is ....

	400	10
15	6,154 − 6,000 = 154	154 − 150 = 4

ⓐ 15 ⓑ 6,154 ⓒ 410 ⓓ 4

4. If 45 X 24 = 1,080, then 10,800 ÷ 24 = ...

ⓐ 45 ⓑ 24 ⓒ 450 ⓓ 240

5. If 26 X 155 + 20 = 4,050, then the remainder of 4,050 ÷ 26 is ....

ⓐ 20 ⓑ 26 ⓒ 155 ⓓ 4,050

Second: Divide using the strategy you prefer:

1. 45,240 ÷ 9 = ...
2. 23,154 ÷ 6 = ...
3. 3,096 ÷ 12 = ...
4. 78,321 ÷ 26 = ...

Third: Complete the following:

1. 45,000 ÷ 5 = ...
2. 40,000 ÷ .... = 8,000
3. .... ÷ 34 = 10,000
4. .... ÷ 12 = 3,000

Fourth: Answer the following:

1. If the profit of one of the shops is 7,280 pounds, and they will be distributed equally among 5 persons, what is the share of each person?

....

2. If 168 pupils are divided equally into groups of 12 pupils each, how many groups can we get?

....

Concept

4.2 Dividing by 2-Digit Divisors

Exercises on Lessons 5 - 7

Using the Standard Algorithm to Divide, Checking Division with Multiplication & Multistep Story Problems

1 Divide using the standard division algorithm:

1. 75 ÷ 5 = ...
2. 86 ÷ 3 = ...
3. 156 ÷ 6 = ...
4. 834 ÷ 4 = ...
5. 756 ÷ 3 = ...
6. 917 ÷ 7 = ...
7. 1,475 ÷ 5 = ...
8. 3,778 ÷ 8 = ...
9. 4,935 ÷ 7 = ...

10 8,016 ÷ 4 = ...

11 9,177 ÷ 3 = ...

12 42,036 ÷ 6 = ...

2 Divide using the **standard division algorithm**:

1 360 ÷ 15 = ...

2 858 ÷ 78 = ...

3 615 ÷ 41 = ...

4 8,000 ÷ 64 = ...

5 2,870 ÷ 14 = ...

6 4,600 ÷ 37 = ...

7 4,935 ÷ 47 = ...

8 14,552 ÷ 68 = ...

9 15,632 ÷ 45 = ...

10 105,821 ÷ 41 = ...

11 57,564 ÷ 26 = ...

12 56,373 ÷ 23 = ...

3 Complete the partial quotients model, then find the quotient:

1

....
5 ⟌ 489
− ....
....
− ....
....

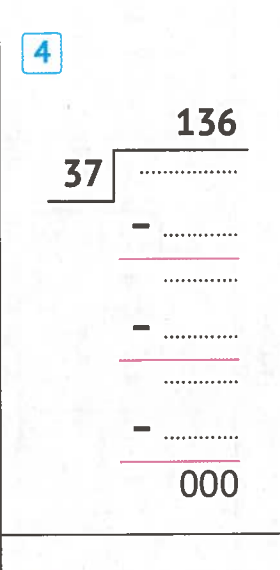
2

228
8 ⟌ ....
− 16
....
− 16
....
− 64
5

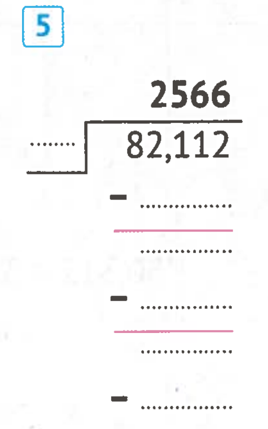
3

124
.... ⟌ 3,224
− 2 6
62
− ....
....
− ....
....

4



5



6

5602
41 ⟌ ....
− ....
....
− ....
....
− ....
15

7

....
24 ⟌ 78,496
− 72
....
− 48
....
− 144
....
− 216
00

8

....
.... ⟌ 82,112
− 64
181
− 160
211
− 192
....
− ....
000

4 Divide using different division strategies:

	Standard Division Algorithm	Partial Quotients Model	Area Model	Division
1				10,455 ÷ 85 = ...
2				3,213 ÷ 17 = ...
3				50,312 ÷ 38 = ...

5 Complete the following:

1. If 35 X 13 = 455, then 455 ÷ 13 = ...
2. If 6,048 ÷ 24 = 252, then 24 x 252 = ...
3. If 61 X 16 = 976, then 980 ÷ 61 = 16 and the remainder is ....
4. If 2,000 ÷ 54 = 37, and the remainder is 2, then 37 X 54 = ...
5. The number that if divided by 23 has a quotient of 212 is ....
6. The number that if divided by 34 has a quotient of 102, and the remainder is 11 is ....
7. The number that if multiplied by 12 gives the result 1,260 is ....
8. 23 X .... = 2,346
9. 2,553 ÷ .... = 23
10. .... ÷ 14 = 1003

6 Answer the following:

1. A bakery made **140** servings of baklava for a party. If each baking tray holds **12** servings of baklava, how many trays will be needed to hold all the baklava?

....

....

....

2. In one year, a textile factory used **11,650** meters of cotton, **4,950** fewer meters of silk than cotton, and **3,500** fewer meters of wool than silk. How many meters of fabric were used in all?

....

....

....

3 An architect is designing a bridge. The architect has two choices for materials. Mighty Steel sells 50 metric tons (t) of steel for 100,000 LE. Silver Strong Steel sells 30 t of steel for 70,000 LE.

If the architect needs 15 t of steel, how much money will be saved by purchasing from Mighty Steel?

....

....

....

....

4 Zeinab ordered 12 packages of fabric squares to make a quilt. Each package has 18 fabric squares, and Zeinab used all the squares for her quilt. Reem made a quilt that was 13 squares wide by 13 squares long. How many fewer squares did Reem use than Zeinab for her quilt?

....

....

....

....

5 Nagi sold a total of 30 boxes of sports T-shirts at his store on Monday. These boxes contained only basketball T-shirts and football T-shirts. Each box contained 25 sports T-shirts. He earned 3 LE for each sports T-shirt he sold. He earned a total of 1,134 LE from the football T-shirts he sold. How much money did Nagi earn from the basketball T-shirts he sold?

....

....

....

6 Malek and his family are going on a road trip to his grandmother's house, which is 465 kilometers away. On Friday, they traveled 124 km. On Saturday, they traveled 210 km. How many kilometers will they need to travel on Sunday to reach his grandmother's house?

....

....

7 If the total price of 25 books is 1,875 pounds, what is the price of 36 books?

....

....

8 Hussam bought a car and paid 85,500 pounds as a down payment (part of the price), and the rest of the car's price is paid in 24 equal monthly installments. If the total price of the car is 163,500 pounds, what is the value of each installment?

....

....

9 A school has 456 boys and 419 girls. It is intended to divide boys and girls equally into 25 classes in the school. How many students will be in each class?

....

....

10 A rectangular garden with dimensions of 124 meters by 85 meters, divided into rectangular planting basins, each of which is 62 square meters. How many basins are in the garden?

....

....

Assessment on Concept 2

First: Choose the correct answer:

1. The quotient in the following division model is ....

$$\begin{array}{r} 0437 \\ 12 \overline{)\,5{,}248} \\ -\ 48 \\ \hline 44 \\ -\ 36 \\ \hline 88 \\ -\ 84 \\ \hline 4 \end{array}$$

(a) 5,248 (b) 12 (c) 4 (d) 437

2. The divisor in the following division model is ....

$$\begin{array}{r} 0181 \\ 25 \overline{)\,4{,}528} \\ -\ 25 \\ \hline 202 \\ -\ 200 \\ \hline 28 \\ -\ 25 \\ \hline 3 \end{array}$$

(a) 4,528 (b) 25 (c) 3 (d) 181

3. The remainder in the following division model is ....

$$\begin{array}{r} 029 \\ 32 \overline{)\,954} \\ -\ 64 \\ \hline 314 \\ -\ 288 \\ \hline 26 \end{array}$$

(a) 954 (b) 32 (c) 26 (d) 29

4. From the following division model, 802 = ...

$$\begin{array}{r} 036 \\ 22 \overline{)\,802} \\ -\ 66 \\ \hline 142 \\ -\ 132 \\ \hline 10 \end{array}$$

(a) 22 X 36 + 10 (b) 22 + 36 X 10 (c) 22 X 36 X 10 (d) 22 + 36 + 10

5. 24,000 ÷ 600 = ...

(a) 4 (b) 40 (c) 400 (d) 4,000

Second: Complete the following:

1. If 4 X 60 = 240, then 400 X 600 = ...
2. 450,000 ÷ .... = 900
3. If 24 X 15 = 360, then the remainder of 375 ÷ 15 is ....
4. If 248 ÷ 12 = 20 (R 8), then 12 X 20 + ... = 248.
5. 60 X 300 ....

Third: Answer the following:

There are **205** people at a concert. After the concert, **40** people left in cars, the rest of them want to go home by a microbus. If the load of each microbus is **11** people, how many microbuses are needed for everyone to get home?

....

Unit 5

Concept

Multiplication and Division with Decimals

5.1 Multiplying Decimals

Exercises on Lessons 1 & 2

Multiplying by Powers of Ten & Multiplying Decimals by Whole Numbers

1 Find the product of:

1. 12 X 10 = ...
2. 9 X 100 = ...
3. 101 X 1,000 = ...
4. 65 X 0.1 = ...
5. 26 X 0.01 = ...
6. 17 X 0.001 = ...
7. 0.5 X 10 = ...
8. 0.75 X 100 = ...
9. 0.256 X 1,000 = ...
10. 0.2 X 0.1 = ...
11. 0.36 X 0.01 = ...
12. 0.12 X 0.001 = ...
13. 3.25 X 10 = ...
14. 4.12 X 100 = ...
15. 3.19 X 1,000 = ...
16. 42.12 X 0.1 = ...
17. 55.12 X 0.01 = ...
18. 36.01 X 0.001 = ...
19. 0.02 X 10 = ...
20. 0.36 X 100 = ...
21. 0.17 X 1,000 = ...
22. 6.35 X 0.1 = ...
23. 42.14 X 0.01 = ...
24. 3.1 X 0.001 = ...

2 Find the product of:

1. 25 X 0.5 = ...
2. 12 X 0.2 = ...
3. 9 X 1.35 = ...
4. 12 X 0.07 = ...

5. 2.6 X 0.6 = ...
6. 17 X 0.001 = ...
7. 3.33 X 5 = ...
8. 9.56 X 9 = ...
9. 253 X 0.003 = ...
10. 0.008 X 5 = ...
11. 4.5 X 0.09 = ...
12. 6.35 X 3 = ...
13. 2.4 X 12 = ...
14. 0.45 X 13 = ...
15. 3.7 X 22 = ...
16. 27 X 2.1 = ...
17. 4.3 X 52 = ...
18. 20.5 X 12 = ...
19. 12.4 X 11 = ...
20. 45 X 2.07 = ...
21. 0.365 X 23 = ...
22. 0.15 X 124 = ...
23. 3.02 X 12 = ...
24. 1.12 X 36 = ...

3 Complete the following:

1. .... X 10 = 50
2. .... X 100 = 3,300
3. .... X 1,000 = 20,000
4. .... X 0.1 = 0.7
5. .... X 0.01 = 0.03
6. .... X 0.001 = 0.002
7. .... X 10 = 5
8. .... X 100 = 50
9. .... X 1,000 = 700
10. .... X 0.1 = 0.24
11. .... X 0.01 = 0.024
12. .... X 0.001 = 0.017
13. 42 X .... = 420
14. 23 X .... = 2,300
15. 65 X .... = 56,000
16. 14 X .... = 1.4
17. 6.3 X .... = 0.063
18. 32 X .... = 0.032
19. 0.05 X .... = 50
20. 63.7 X .... = 6,370
21. 2.05 X .... = 20.5
22. 0.06 X .... = 0.006
23. 3.7 X .... = 3,700
24. 20 X .... = 0.02

4 Compare using (<, = or >):

1 25 X 0.1	0.25 X 10	2 50 X 0.01	0.5 X 100
3 73.2 X 0.1	0.732 X 100	4 36 X 0.1	3.6 X 10
5 56 X 11	5.6 X 11	6 45 X 0.12	4.5 X 12
7 1.44 X10	1.2 X 12	8 75 X 0.01	0.25 X 3
9 15 X 0.15	2.25 X 0.1	10 9 X 0.9	8.1 X .01

5 Match:

25 X 10	25 X100	25 X 0.1	25 X 0.01
1	2	3	4

a   

a	b	c	d
2.5 X 1,000	2.5 X 0.1	2.5 X 100	0.25 X 10

6 Complete the following:

1. If 6 X 25 = 150, then 6 X 0.25 = ...
2. If 8 X 50 = 400, then 0.8 X 5 = ...
3. If 5 X 24 = 120, then 5 X 2.4 = ...
4. If 1.2 X 25 = 30, then 12 X 0.25 = ...
5. If 0.24 X 5 = 1.2, then 2.4 X 5 = ...
6. When multiplying by 0.01, we move the decimal point .... places to the ....
7. When multiplying by ...., we move the decimal point one place to the right
8. When multiplying by ...., we move the decimal point 3 places to the left.
9. When multiplying 2.45 x 100, the place value of 4 changes from .... to ....

10 1.5 X .... = 30	11 10.5 X .... = 1.05	12 0.25 X .... = 200
13 7.5 X .... = 15	14 11 X .... = 12.1	15 0.31 X .... = 0.93

Assessment on Lessons 1&2

First: **Find the product of:**

1. 8 X 100 = ...
2. 3 X 0.1 = ...
3. 45 X 0.001 = ...
4. 3.5 X 4 = ...
5. 5.25 X 100 = ...

Second: **Compare using (<, = or >):**

1. 5 X0.3 .... 0.5 X 3
2. 24 X 0.2 .... 8 X 0.06
3. 1.2 X 100 .... 0.12 X 10
4. 635 X 0.1 .... 6.35 X 100
5. 825 X 0.01 .... 8.25 X 10

Third: **Match:**

1. 2.35 X 10	a. 23.5 X 10
2. 2.35 X 0.1	b. 23.5 X 1
3. 2.35 X 100	c. 23.5 X 100
4. 2.35 X 1,000	d. 23.5 X 0.01

Fourth: **Complete the following:**

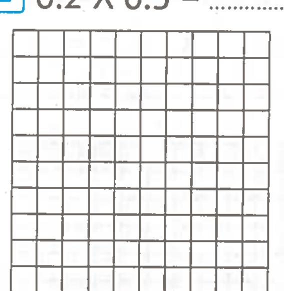
1. If 5 X 24 = 120, then 5 X 2.4 = ...
2. If 0.8 X 421 = 336.8, then 8 X 4.21 = ...
3. When multiplying a whole number by 0.001, we move the decimal point .... places to the ....
4. 0.5 X .... = 0.05
5. .... X 100 = 9.2

Exercises on Lessons 3 - 5

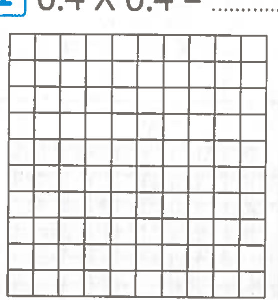
Multiplying Tenths by Tenths, Estimating Decimal Products & Using the Area Model to Multiply Decimals

1 Use the **Base 10** grids to find the product:

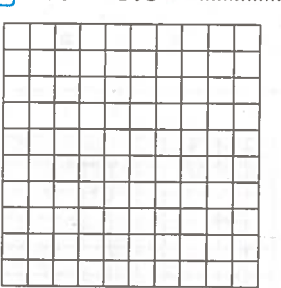
1) 0.2 X 0.3 = ...



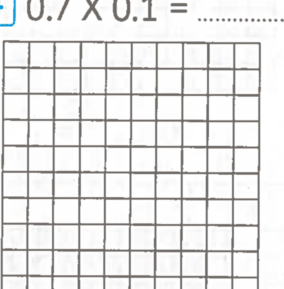
2) 0.4 X 0.4 = ...



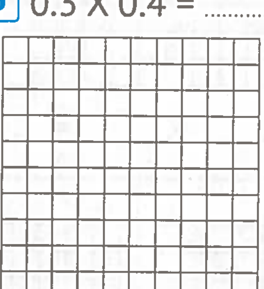
3) 0.6 X 0.8 = ...



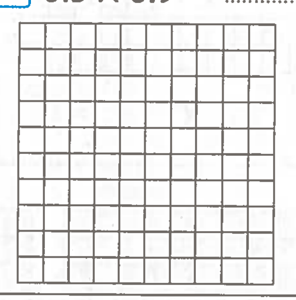
4) 0.7 X 0.1 = ...



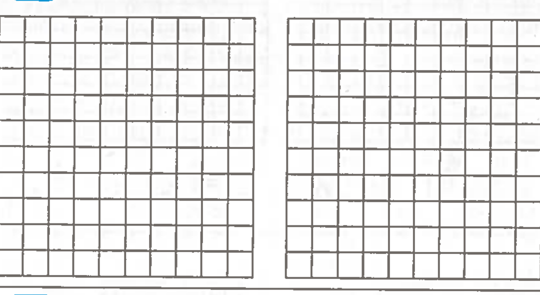
5) 0.3 X 0.4 = ...



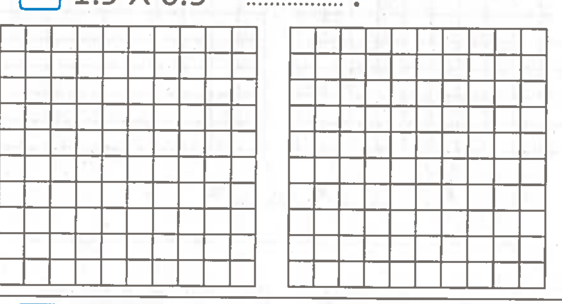
6) 0.5 X 0.9 = ...



7) 1.4 X 0.2 = ...

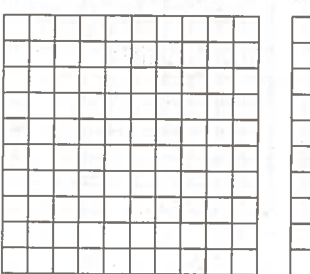


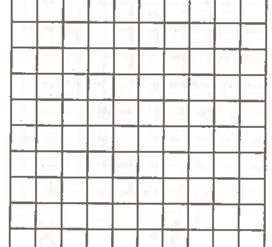
8) 1.5 X 0.3 = ...



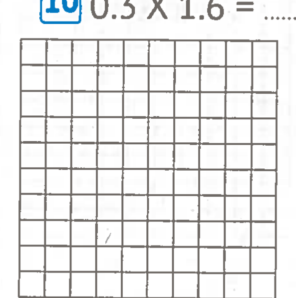


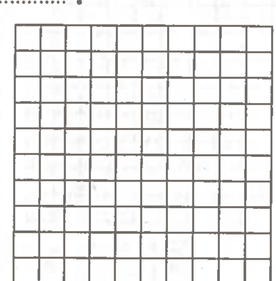
9) 1.1 X 0.7 = ...



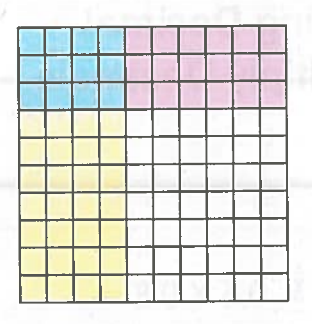


10) 0.3 X 1.6 = ...

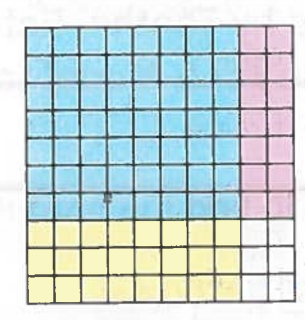




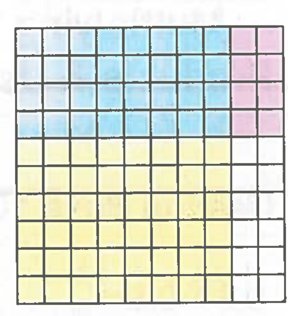
2 Write the multiplication problem represented by each of the following **Base 10** grids, then find the result:



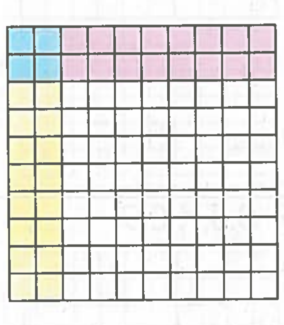

1 ………… X ………… = ………… .



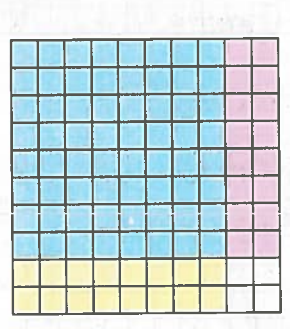
2 ………… X ………… = ………… .



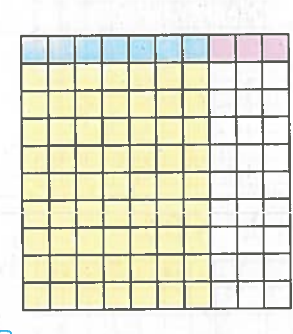
3 ………… X ………… = ………… .



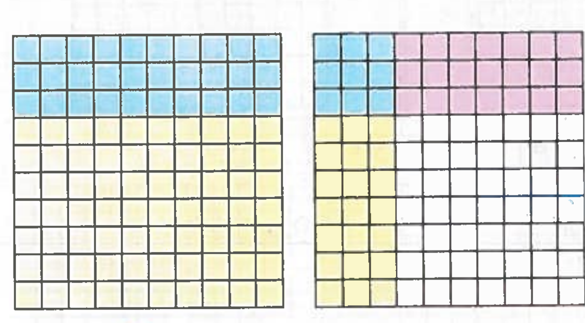
4 ………… X ………… = ………… .



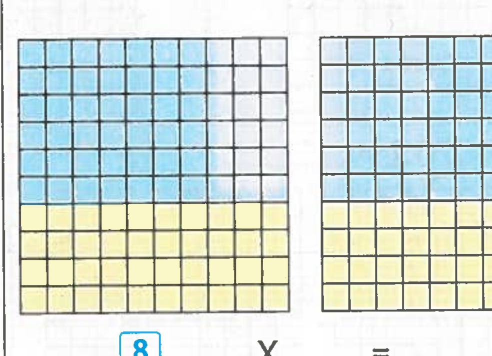
5 ………… X ………… = ………… .



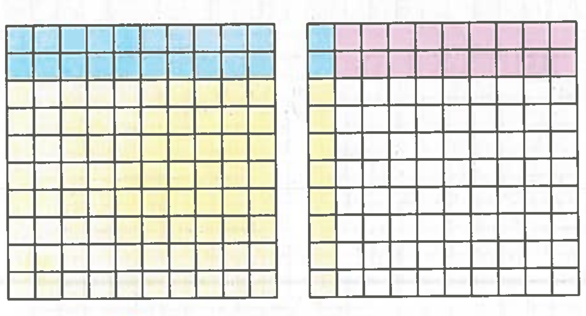
6 ………… X ………… = ………… .



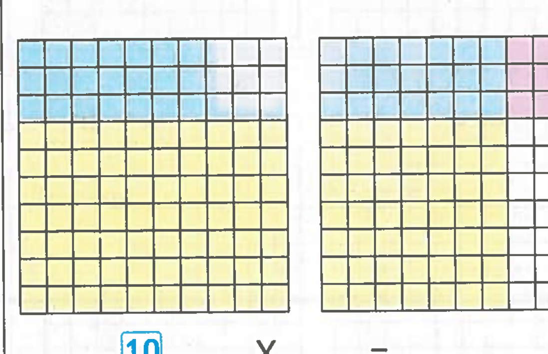
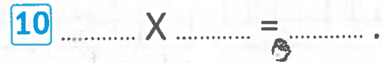

7 ………… X ………… = ………… .



8 ………… X ………… = ………… .




9 ………… X ………… = ………… .

10 ………… X ………… = ………… .

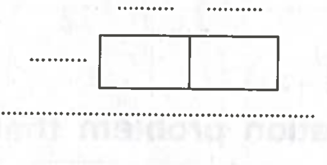
3 Estimate the product of the multiplication. Round to the nearest whole number:

1. 2.5 X 89.7 Estimate: .... X .... = ...
2. 6.45 X 20.45 Estimate: .... X .... = ...
3. 100.2 X 29.7 Estimate: .... X .... = ...
4. 4.28 X 3.68 Estimate: .... X .... = ...
5. 14.8 X 29.7 Estimate: .... X .... = ...
6. 99.7 X 3.7 Estimate .... X .... = ...
7. 0.24 X 243.4 Estimate: .... X .... = ...
8. 6.8 X 63.5 Estimate: .... X .... = ...

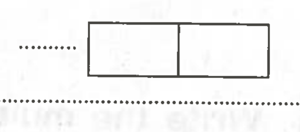
4 Multiply using the area model:

1. 0.9 X 4.2

2. 0.08 X 4.7



3. 6 X 20.3

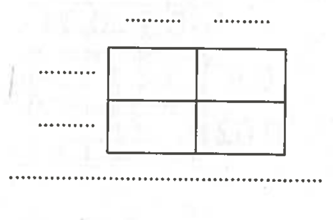


4. 0.9 X 4.2

5. 0.6 X 3.04

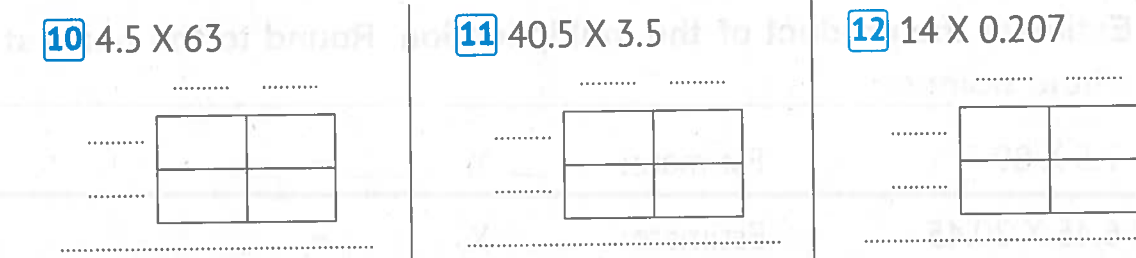
6. 9 X 20.3

7. 0.12 X 4.5

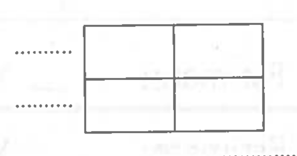


8. 63 X 0.74

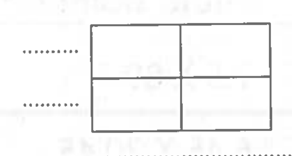
9. 0.24 X 2.7

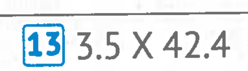
10 4.5 X 63



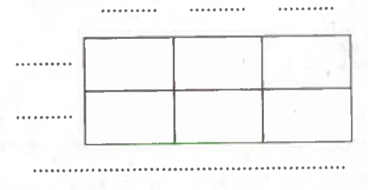
11 40.5 X 3.5



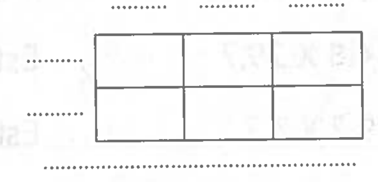
12 14 X 0.207



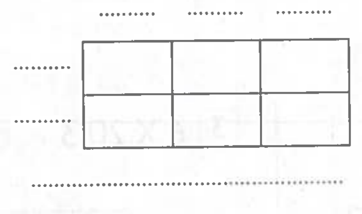
13 3.5 X 42.4



14 3.7 X 30.23



15 0.14 X 17.3



16 3.57 X 1.7

5 Write the **multiplication problem** that expresses the following area models, and then solve them:

1 .... X .... = ...

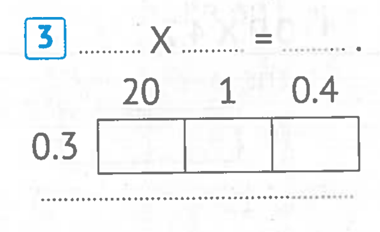
	0.5	0.02
0.4		

2 .... X .... = ...

	2	0.3
7		

3 .... X .... = ...

	20	1	0.4
0.3			



4 .... X .... = ...

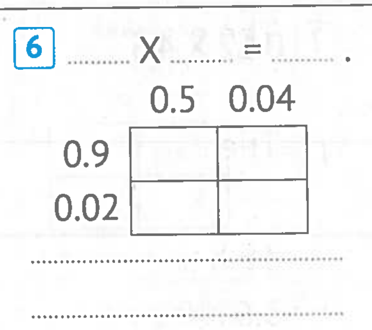
	4	0.3
0.2		
0.07		

5 .... X .... = ...

	40	5
3		
0.5		

6 .... X .... = ...

	0.5	0.04
0.9		
0.02		



7 .... X .... = ...

	0.1	0.04	0.002
40			
7			

....

....

8 .... X .... = ...

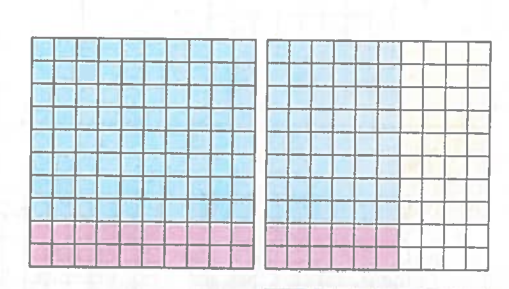
	3	0.4	0.09
4			
0.7			

....

....

6 Choose the correct answer:

1 The multiplication problem that represents the opposite model is ....



(16 X 80 or 1.6 X 0.8 or 160 X 80 or 1.6 X 8)

2 The multiplication problem that represents the opposite model is ....

(3 X 9 or 30 X 0.9 or 30 X 90 or 0.3 X 0.9)

3 The multiplication problem that represents the opposite model is ....

	7	0.3	0.02
50			
0.3			

(50.3 X 7.32 or 5.3 X 7.32 or 5.3 X 73.2 or 50.3 X 73.2)

4 The multiplication problem that represents the opposite model is ....

	20	2	0.3
5			
0.07			

(5.7 X 22.3 or 57 X 223 or 5.07 X 202.3 or 5.07 X 22.3)

5 If 12 X 45 = 540, then .... X 0.45 = 540. (1.2 or 0.12 or 120 or 1,200)

6 If 1.3 X 7.2 = 9.36, then 13 X .... = 93.6. (0.72 or 7.2 or 72 or 720)

7 The estimate of 19.7 x 3.27 to the nearest whole number is ....

(60 or 6 or 57 or 65.4)

8 The estimate of 12.2 x 0.578 to the nearest whole number is ....

(0 or 13 or 12 or 6.1)

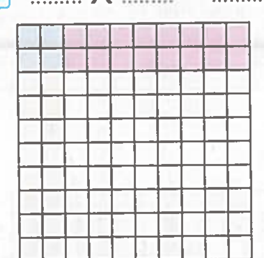
9 35 X 0.2 ◯ 3.5 X 2 (> or = or < or ≤)

10 3.6 X 0.01 ◯ 36 X 10 (> or = or < or ≤)

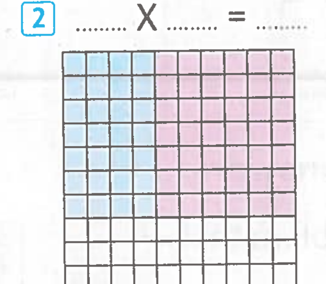
Assessment on Lessons 3-5

First: Write the multiplication problem represented by each of the following **Base 10** grids, then find the product:

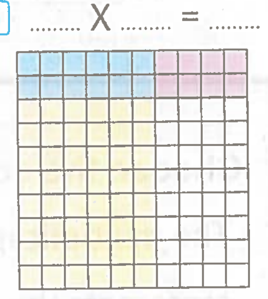
1 .... X .... = ...



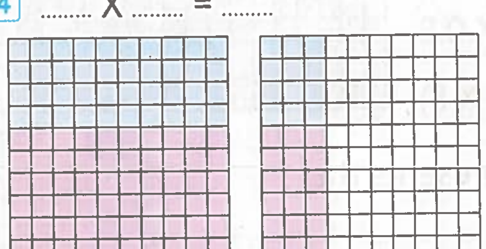
2 .... X .... = ...



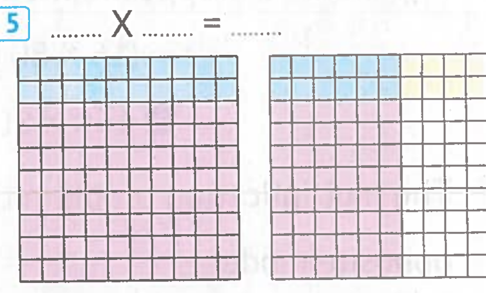
3 .... X .... = ...



4 .... X .... = ...



5 .... X .... = ...



Second: Write the multiplication problems that express the following **area models**, and then solve them:

1

	2	0.9
0.7		

1 ....
....

2

	10	0.08
90		
0.2		

2 ....
....

3

	800	50	2
0.2			
0.04			

3 ....
....

Third: Complete the following:

1 If 2 X 45 = 90, then .... X 0.45 = 0.09.

2 If 5 X 3 = 15, then 5 X .... = 1.5.

3 85.7 X 9.86 ⟶ Estimate: .... X .... = ... (To the nearest whole number)

4 If 625 X 4 = 2,500, then 6.25 X 0.4 = ...

5 If 2.5X 1.6 = 4, then 25 X 16 = ...

Fourth: Answer the following:

Marwa is a museum curator. She wants to repaint the museum walls, which are measured in meters. There are **four** walls, each measuring **3.8 m × 15.2 m**. Estimate how many square meters she needs to cover with paint. Explain your answer.

....

Exercises on Lessons 6 & 7

Multiplying Decimals through the Hundredths Place & Multiplying Decimals through the Thousandths Place

1 Multiply (35 x 12) using the standard algorithm, then complete:

1. 3.5 X 12 = ...
2. 35 X 0.12 = ...
3. 3.5 X 1.2 = ...
4. 0.35 X 1.2 = ...
5. 3.5 X 0.12 = ...
6. 0.35 X 12 = ...
7. 35 X 1.2 = ...
8. 0.35 X 0.12 = ...

```
    3 5
X   1 2
-------
.......
+ .....
-------
.......
```

2 Multiply (105 X 24) using the standard algorithm, then complete:

1. 105 X 2.4 = ...
2. 1.05 X 24 = ...
3. 105 X 0.24 = ...
4. 0.105 X 24 = ...
5. 105 X 0.024 = ...
6. 10.5 X 2.4 = ...
7. 10.5 X 24 = ...
8. 1.05 X 0.24 = ...

```
   1 0 5
X    2 4
--------
........
+ ......
--------
........
```

3 Multiply using the standard algorithm:

1	2	3	4
36 X 0.7 = ...	0.368 X 5 = ...	6.07 X 9 = ...	115.2 X 0.06 = ...

5	6	7	8
4.57 X 5.9 = ... + ... = ...	3.336 X 21 = ... + ... = ...	37.07 X 13 = ... + ... = ...	12.25 X 3.5 = ... + ... = ...

9	10	11	12
6.35 X 1.7 = ... + ... = ...	3,021 X 0.032 = ... + ... = ...	20.02 X 3.6 = ... + ... = ...	3.27 X 24 = ... + ... = ...

4 Compare using (<, = or >):

1. 2.8 X 3.4 ______ 0.28 X 34
2. 6.3 X 12 ______ 0.63 X 12
3. 6.4 X 0.37 ______ 64 X 3.7
4. 2.2 X 2.2 ______ 0.22 X 22
5. 4.5 X 0.2 ______ 45 X 20
6. 6.34 X 32 ______ 63.4 X 3.2
7. 0.45 X 0.1 ______ 4.5 X 10
8. 67 X 10.2 ______ 67 X 1.2
9. 0.5 X 0.8 ______ 0.2 X 0.2
10. 3.2 X 3.2 ______ 0.32 X 320

5 Answer the following:

1. Nada bought **26** meters of fabric. If the price of one meter was **43.5** pounds, how many pounds did Nada pay?

   ....

2. Khaled bought **9.5** liters of juice with the price of **12.7** pounds per liter. How many pounds did Khaled pay?

   ....

3. If a pizza costs **22.25** LE, how much does **12** pizzas of the same kind cost?

   ....
   ....
   ....

4. A merchant bought two types of cloth, one at a price of **92.5** pounds per square meter, and the other at a price of **58** pounds per square meter. If he bought **10** meters of the first type and **6.5** meters of the second type, how many pounds did the merchant pay?

   ....
   ....

5. Malik walked **7.9** km on Friday and **3.6** km on Saturday, then Malik repeated that every weekend for **6** weeks. How many total kilometers did Malek walk in **6** weeks?

   ....
   ....

Assessment on Lessons 6&7

First: Complete the following:

1. If 25 X 33 = 825, then 0.25 X 3.3 = ...
2. If 137 X 21 = 2,877, then 1.37 X .... = 2.877.
3. 0.02 X 0.03 = ...
4. 0.3 X .... = 0.009
5. 0.2 X 0.3 X 0.5 = ...

Second: Use the standard algorithm to multiply:

1.
```
      5.6
  X   2.3
  -------
  .......
+ .......
  -------
....... ≈ .......
```
(To the nearest Tenth)

2.
```
      0.73
  X   2.8
  -------
  .......
+ .......
  -------
....... ≈ .......
```
(To the nearest Hundredth)

3.
```
      2.08
  X   62
  -------
  .......
+ .......
  -------
....... ≈ .......
```
(To the nearest whole number)

Third: If 452 X 27 = 12,204, then:

1. 4.52 X 2.7 = ...
2. 0.452 X 27 = ...
3. 45.2 X 27 = ...
4. 4.52 X 2.7 = ...
5. 4.52 X 0.27 = ...
6. 0.452 X 0.27 = ...

Fourth: Compare using (<, = or >):

1. 0.8 X 0.3 ◯ 0.8 X 0.03
2. 54 X 1.1 ◯ 0.54 X 11
3. 0.45 X 10 ◯ 45 X 0.1
4. 2.5 X 2.5 ◯ 625 X 0.1

Exercises on Lessons 8-10

Decimals and the Metric System, Measurement, Decimals, and Powers of Ten & Solving Multistep Story Problems

1 Complete:

1. 8,523 ml = ... X .... = ... liters.
2. 954 ml = ... X .... = ... liters.
3. 25 ml = ... X .... = ... liters.
4. 78 liters = ... X .... = ... ml.
5. 2.5 liters = ... X .... = ... ml.
6. 1.24 liters = ... X .... = ... ml.
7. 23 km = ... X .... = ... meters.
8. 0.753 km = ... X .... = ... meters.
9. 235 m = ... X .... = ... km.
10. 3,235 m = ... X .... = ... km.
11. 32 m = ... X .... = ... cm.
12. 3.35 m = ... X .... = ... cm.
13. 0.12 m = ... X .... = ... dm.
14. 45 cm = ... X .... = ... m.
15. 1,247 cm = ... X .... = ... m.
16. 7.5 dm = ... X .... = ... cm.
17. 7.5 kg = ... X .... = ... gm.
18. 85 gm = ... X .... = ... kg.
19. 235 mm = ... X .... = ... cm.
20. 2.8 cm = ... X .... = ... mm.

2 Choose the correct answer:

1. 6.52 kg = ... gm. (65.2 or 652 or 6,520 or 65,200)
2. 549 gm = ... kg. (5,490 or 5.49 or 54.9 or 0.549)
3. 62 ml = ... L. (620 or 6.2 or 0.62 or 0.062)
4. 63.5 liters = ... ml. (635 or 6,350 or 63,500 or 635,000)
5. 45 cm = ... meters. (4,500 or 450 or 4.5 or 0.45)
6. 0.028 meters = ... cm. (0.28 or 2.8 or 28 or 280)
7. 3.2 km = ... m. (32 or 0.32 or 3,200 or 0.032)
8. 45 meters = ... km. (0.045 or 4,500 or 4.5 or 450)
9. 4.5 cm = ... mm. (45 or 0.45 or 450 or 0.045)
10. 256 mm = ... cm. (0.256 or 2.56 or 25.6 or 2,560)

3 Compare using (<, = or >):

1. 45 kg ○ 4,500 gm
2. 3.25 cm ○ 32.5 mm
3. 2.5 meters ○ 2,500 cm
4. 63 liters ○ 0.063 ml
5. 5,000 m ○ 0.5 km
6. 0.02 km ○ 2,000 mm
7. 11.5 L ○ 15.1 L
8. 50 cm ○ 5 mm
9. 600 m ○ 6 km
10. 0.025 kg ○ 2.5 gm

4 Put (✓) in front of the correct statement, and (✗) in front of the wrong statement:

1. 78 kg = 7,800 g ( )
2. 3.5 m = 350 cm ( )
3. 200 ml = 0.2 liters ( )
4. 63 km = 0.063 gm ( )
5. 12.5 meters = 1.25 dm ( )
6. 1 cm = 0.1 mm ( )

7 1 cm = 0.01 meters ( ) 8 25 ml = 0.025 liters ( )

9 10.2 mm = 1.02 cm ( ) 10 45.3 L = 0.453 ml ( )

5 Answer the following:

1 Eman wants to know how much her height increased.

In January, she was **1.34** m tall, and at the end of the year she was **145** cm tall. How many centimeters did Eman increase in height?

....

2 Hazem bought **7** books, the price of one book is **23.5** pounds. Find what Hazem paid.

....

....

3 A fruit merchant has **5** boxes of mangoes, each weighing **9.5** kg and **3** boxes of peaches, each weighing **4,600** grams.

What is the total weights of the fruits that the trader has?

....

....

....

4 If Mazen is **1.64** meters tall and Maryam is **145** centimeters tall.

Find the sum of their heights and the difference between them in cm.

....

....

5 Sami drinks **4** liters of water daily. If he drinks **1.25** liters of water in the morning, and **2,450** milliliters of water in the afternoon, how many liters of water will he drink in the evening?

....

....

Assessment on Lessons 8-10

First: Choose the correct answer:

1. 78.5 m = ... cm.
   - (a) 785
   - (b) 7.85
   - (c) 7,850
   - (d) 0.785

2. .... kg = 460 gm.
   - (a) 0.46
   - (b) 460,000
   - (c) 4.60
   - (d) 4,600

3. 5.2 L = ... mL.
   - (a) 0.052
   - (b) 0.52
   - (c) 52
   - (d) 5,200

4. 2.56 X .... = 25.6
   - (a) 10
   - (b) 100
   - (c) 0.1
   - (d) 0.01

5. 0.01 X .... = 0.025
   - (a) 0.25
   - (b) 2.5
   - (c) 25
   - (d) 250

Second: Complete the following:

1. 456 cm = ... X .... = ... m.
2. 5.9 kg = ... X .... = ... gm.
3. 96 mL = ... X .... = ... L.
4. 4,258 cm = ... X .... = ... m.
5. .... X 85 = 0.085

Third: Compare using (<, = or >):

1. 45 kg ( ) 4,500 gm
2. 5.02 L ( ) 5,020 mL
3. 75 dm ( ) 750 m
4. 25 X 0.01 ( ) 0.25 X 100

Fourth: Answer the following:

Ali's cat weighs **7** kilograms and his dog weighs **17** kilograms. When Ali took them to the vet, he knew that his cat had gained **0.45** kilograms and his dog had gained **0.12** kilograms. What is the total weight of the two pets now?

....

....

....

Assessment On Concept 1

First: **Choose the correct answer:**

1 The multiplication problem that expresses the corresponding model is ....

ⓐ 0.12 X 0.35 ⓑ 1.2 X 3.5

ⓒ 0.3 X 0.5 ⓓ 30 X 50

2 The area model that expresses 2.5 X 0.34 is ....



ⓐ

	20	5
30		
5		

ⓑ

	2	0.5
0.3		
0.05		

ⓒ

	20	0.5
3		
0.5		

ⓓ

	2	0.5
0.3		
0.5		

3 If 25 X 16 = 400, then 2.5 X 1.6 = ...

ⓐ 0.04 ⓑ 0.4 ⓒ 4 ⓓ 40

4 0.48 liter = ... milliliter.

ⓐ 0.048 ⓑ 4.8 ⓒ 48 ⓓ 480

5 (3 Tenths) X (8 Hundredths) = ...

ⓐ 0.024 ⓑ 0.24 ⓒ 24 ⓓ 240

Second: **Complete the following:**

1 86 X .... = 0.086

2 If 24 X 12 = 288, then 2.4 X 0.012 = ...

3 25.7 X 9.8 → Estimate .... X .... = ...(To the nearest whole number)

4 4,258 gm = ...X .... = ... kg.

5 0.7 X 0.8 X 0.5 = ...

Third: **Compare using (<, = or >):**

1 0.2 X 0.01 ◯ 0.4 X 0.05

2 6.2 X 100 ◯ 0.062 X 10

3 75 cm ◯ 750 ml

4 1.2 X 3.5 ◯ 0.12 X 350

Fourth: **Answer the following:**

1 The length of the route taken by the river bus is 58.7 km. How many kilometers would the river bus travel if it traveled this route 9 times a day?

....

2 Souad bought 20 meters of fabric. If the price of one meter is 65.5 pounds, what is the price of the whole fabric?

....

Concept

5.2 Dividing Decimals

Exercises on Lessons 11-13

Dividing by Powers of Ten, Patterns and Relationships in Powers of Ten & Modeling Decimal Division

1 Divide:

1. 17 ÷ 10 = ...
2. 8 ÷ 100 = ...
3. 102 ÷ 1,000 = ...
4. 45 ÷ 0.1 = ...
5. 23 ÷ 0.01 = ...
6. 45 ÷ 0.001 = ...
7. 0.6 ÷ 10 = ...
8. 0.12 ÷ 100 = ...
9. 125 ÷ 1,000 = ...
10. 0.9 ÷ 0.1 = ...
11. 0.27 ÷ 0.01 = ...
12. 0.42 ÷ 0.001 = ...
13. 4.24 ÷ 10 = ...
14. 8.13 ÷ 100 = ...
15. 4.17 ÷ 10 = ...
16. 61.75 ÷ 0.1 = ...
17. 45.72 ÷ 0.01 = ...
18. 27.04 ÷ 0.001 = ...
19. 0.07 ÷ 10 = ...
20. 0.96 ÷ 100 = ...
21. 34 ÷ 1,000 = ...
22. 5.63 ÷ 0.1 = ...
23. 63.75 ÷ 0.01 = ...
24. 4.2 ÷ 0.001 = ...
25. 6.35 X 0.1 = ...
26. 42.14 X 0.01 = ...
27. 31 X 0.001 = ...

2 Complete the following:

1. .... ÷ 10 = 0.8
2. .... ÷ 100 = 6.32
3. .... ÷ 1,000 = 20
4. .... ÷ 0.1 = 60
5. .... ÷ 0.01 = 400
6. .... ÷ 0.001 = 300

7 .... ÷ 10 = 0.3

8 .... ÷ 100 = 0.07

9 .... ÷ 1,000 = 0.009

10 .... ÷ 0.1 = 2.4

11 .... ÷ 0.01 = 2.5

12 .... ÷ 0.001 = 960

13 0.25 ÷ .... = 25

14 0.58 ÷ .... = 58

15 75 ÷ .... = 75,000

16 23 ÷ .... = 2.3

17 7.5 ÷ .... = 0.075

18 37 ÷ .... = 0.037

19 0.07 ÷ .... = 70

20 45.2 ÷ .... = 4,520

21 3.06 ÷ .... = 30.6

22 0.03 ÷ .... = 0.003

23 3.9 ÷ .... = 3,900

24 50 ÷ .... = 0.05

3 Complete the following patterns:

1 12.5 ÷ .... = 12.5 X .... = 125

2 600 ÷ .... = 600 X .... = 0.6

3 225 ÷ .... = 225 X .... = 22.5

4 225 ÷ .... = 225 X .... = 2.25

5 3.01 ÷ .... = 3.01 X .... = 301

6 1 ÷ .... = 1 X .... = 0.1

7 6 ÷ .... = 6 X .... = 0.06

8 0.02 ÷ .... = 0.02 X .... = 0.2

9 0.05 ÷ .... = 0.05 X .... = 50

10 0.005 ÷ .... = 0.005 X .... = 5

11 12 ÷ .... = 12 X .... = 0.012

12 32 ÷ .... = 32 X .... = 32,000

4 Match:

1 18 X 0.1
2 18 X 0.01
3 18 X 0.001
4 18 X 10
5 18 X 100

a 18 ÷ 1,000
b 18 ÷ 10
c 18 ÷ 100
d 18 ÷ 0.01
e 18 ÷ 0.1

5 Compare using (<, = or >):

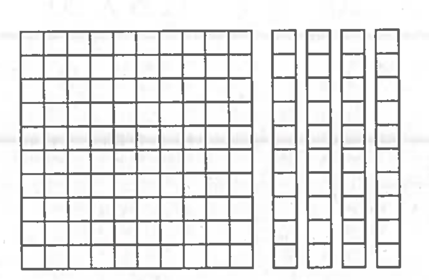
1. 2.5 X 10 ____ 25 ÷ 0.01
2. 0.1 X 100 ____ 10 ÷ 100
3. 30 X 100 ____ 3 ÷ 0.001
4. 125 ÷ 10 ____ 12.5 X 10
5. 15 X 0.01 ____ 1.5 ÷ 10
6. 721 X 0.1 ____ 721 ÷ 10
7. 18.8 ÷ 10 ____ 188 ÷ 0.1
8. 225 X 0.1 ____ 0.225 ÷ 0.1
9. 20.02 ÷ 10 ____ 2.2 ÷ 10
10. 20 X 0.5 ____ 1 ÷ 0.1

6 Complete each conversion. Then, write a multiplication equation and a division equation with the same answer:

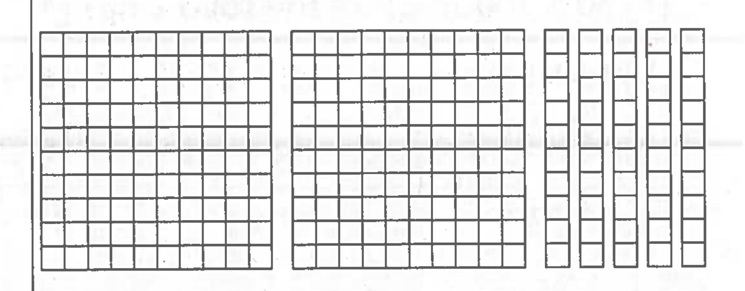
1. 65 kg = ... gm.
   65 X .... = ...
   65 ÷ .... = ...
2. 2.5 m = ... cm.
   2.5 X .... = ...
   2.5 ÷ .... = ...
3. 5 liters = ... ml.
   5 X .... = ...
   5 ÷ .... = ...
4. 923 meters = ... km.
   923 X .... = ...
   923 ÷ .... = ...
5. 23 km = ... m.
   23 X .... = ...
   23 ÷ .... = ...
6. 25 mm = ... cm.
   25 X .... = ...
   25 ÷ .... = ...
7. 225 ml = ... liter.
   225 X .... = ...
   225 ÷ .... = ...
8. 200 gm = ... kg.
   200 X .... = ...
   200 ÷ .... = ...
9. 2.5 cm = ... mm.
   2.5 X .... = ...
   2.5 ÷ .... = ...
10. 42 dm = ... cm.
    42 X .... = ...
    42 ÷ .... = ...

7 Use the Base 10 blocks to model the following problems:

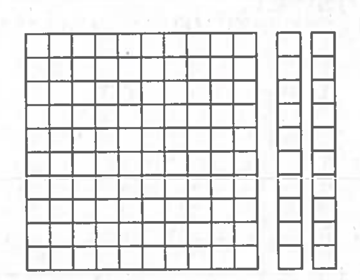
1 1.4 ÷ 0.7 = ...



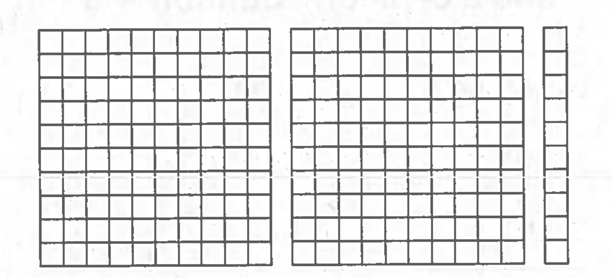
2 2.5 ÷ 0.5 = ...



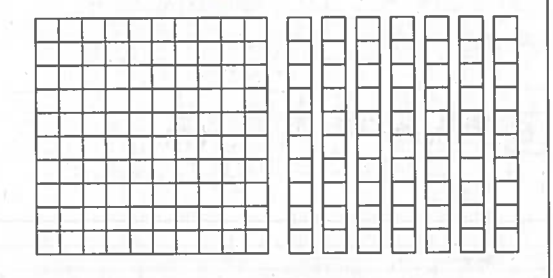
3 1.2 ÷ 0.6 = ...



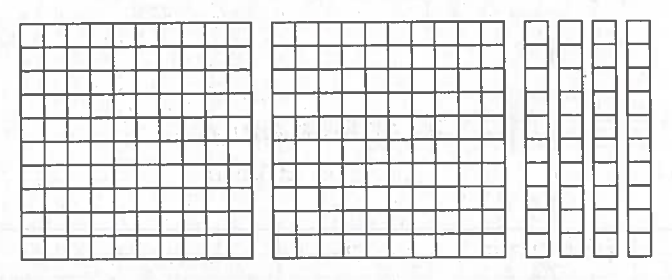
4 2.1 ÷ 0.7 = ...



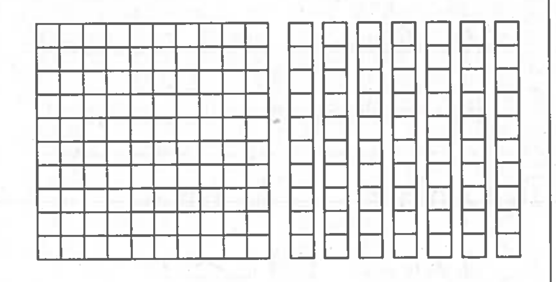
5 1.8 ÷ 0.9 = ...



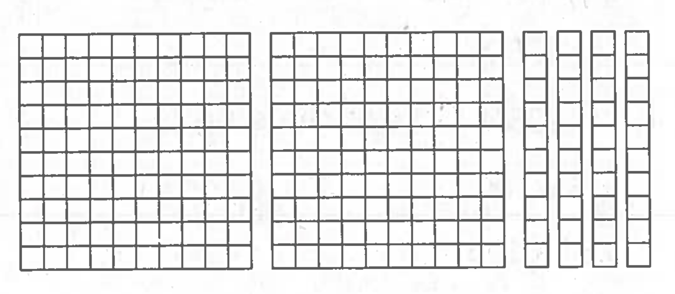
6 2.4 ÷ 0.8 = ...



7 1.8 ÷ 0.45 = ...



8 2.4 ÷ 0.6 = ...



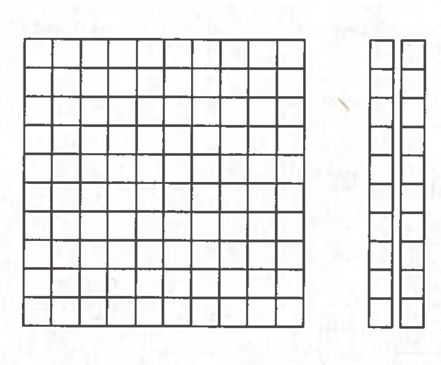
Assessment on Lessons 11-13

First: **Complete the following:**

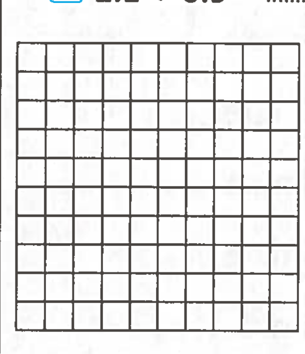
1. 45 X 0.01 = ...
2. 25 ÷ 1,000 = ...
3. 12.5 X 100 = ...
4. 5.74 ÷ 0.1 = ...
5. .... X 10 = 5.6
6. .... ÷ 100 = 0.2
7. 7.8 X .... = 0.78
8. 85.9 ÷ .... = 8,590
9. 78.5 X 0.1 = ... ÷ 100
10. 5.6 X .... = 56 ÷ 0.01

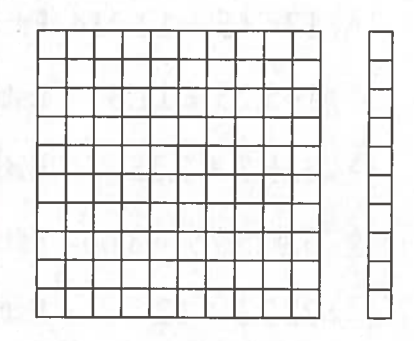
Second: **Use the Base 10 blocks to model the problems and divide:**

1. 1.2 ÷ 0.15 = ...



2. 2.1 ÷ 0.3 = ...





Third: **Complete each conversion. Then, write a multiplication equation and a division equation with the same answer:**

1. 137 cm = ... m.
   137 X .... = ...
   137 ÷ .... = ...
2. 86 kg = ... kg.
   86 X .... = ...
   86 ÷ .... = ...
3. 8,102 ml = ... l.
   8,102 X .... = ...
   8,102 ÷ .... = ...

Fourth: **Compare using (<, = or >):**

1. 856 ÷ 100 ⬭ 856 X 0.01
2. 5.64 X 100 ⬭ 5.64 ÷ 0.001
3. 200 ÷ 1,000 ⬭ 200 X 0.01
4. 12 X 0.01 ⬭ 12 ÷ 0.01

Exercises on Lessons 14-17

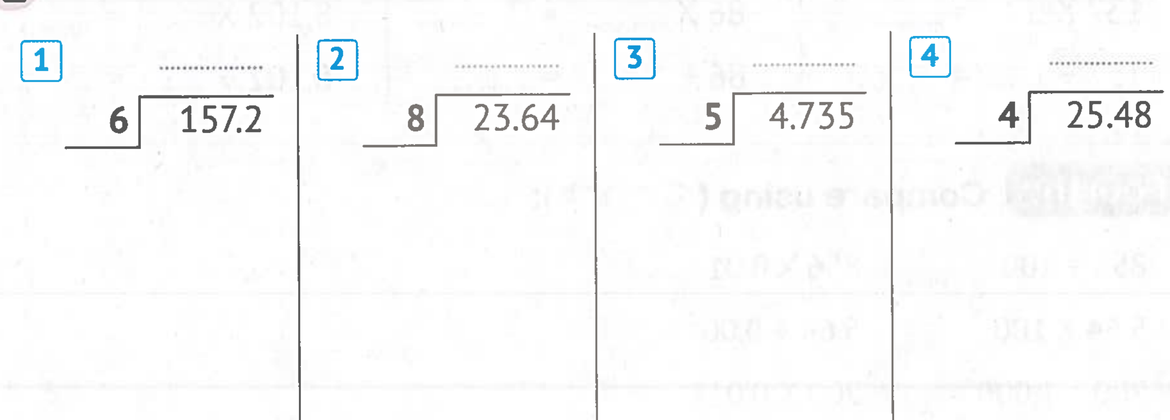
Estimating Decimal Quotients, Dividing Decimals by Whole Numbers, Dividing Decimals by Decimals & Solving Challenging Multistep Story Problems

1 Estimate the **decimal quotients** in each of the following:

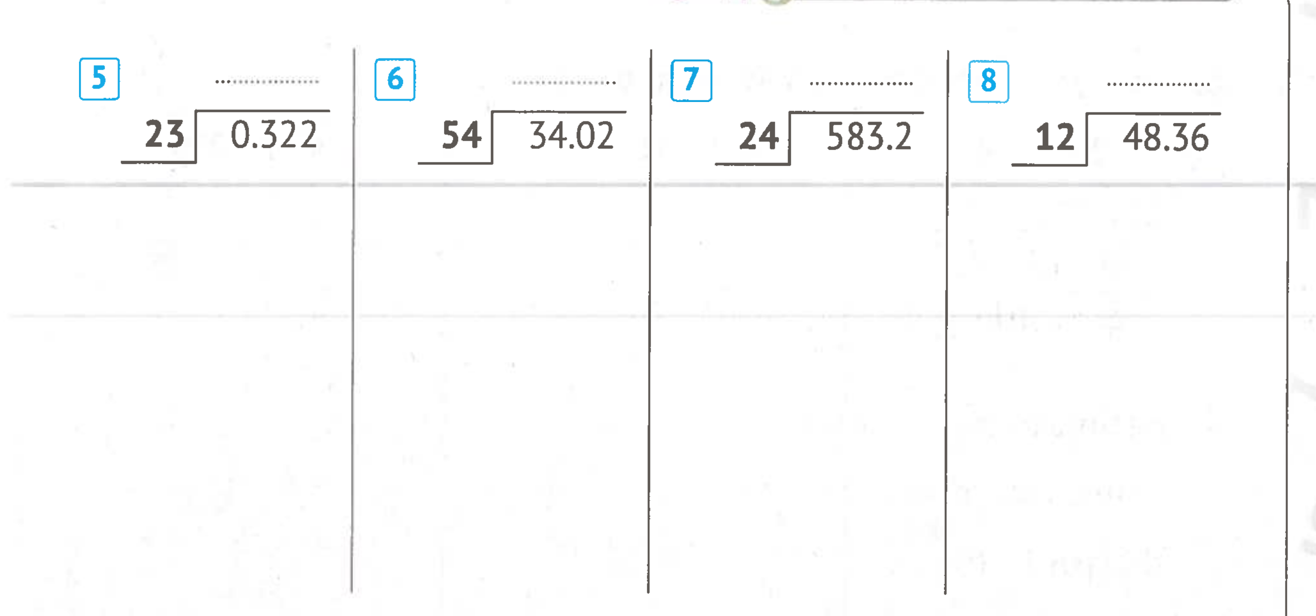
(round the dividend to the nearest **whole number** and the divisor to the nearest **compatible whole number**)

1. 56.7 ÷ 8.7 **Estimate:** .... ÷ .... = ... or .... ÷ .... = ...
2. 36.25 ÷ 5.12 **Estimate:** .... ÷ .... = ... or .... ÷ .... = ...
3. 124.45 ÷ 12.214 **Estimate:** .... ÷ .... = ... or .... ÷ .... = ...
4. 145.25 ÷ 12.8 **Estimate:** .... ÷ .... = ... or .... ÷ .... = ...
5. 325.8 ÷ 8.25 **Estimate:** .... ÷ .... = ... or .... ÷ .... = ...
6. 3,425.75 ÷ 8.65 **Estimate:** .... ÷ .... = ... or .... ÷ .... = ...
7. 225.3 ÷ 12 **Estimate:** .... ÷ .... = ... or .... ÷ .... = ...
8. 128.36 ÷ 10 **Estimate:** .... ÷ .... = ... or .... ÷ .... = ...
9. 36.25 ÷ 14.9 **Estimate:** .... ÷ .... = ... or .... ÷ .... = ...

2 Use the **standard algorithm** to divide:



1. 157.2 ÷ 6
2. 23.64 ÷ 8
3. 4.735 ÷ 5
4. 25.48 ÷ 4



3 Use the **standard algorithm** to divide:

1. .... $8 \overline{)2.8}$
2. .... $2 \overline{)5.23}$
3. .... $4 \overline{)3.22}$
4. .... $5 \overline{)25.2}$
5. .... $16 \overline{)24}$
6. .... $25 \overline{)28.5}$
7. .... $4 \overline{)25}$
8. .... $6 \overline{)3.15}$

4 Use the standard algorithm to divide:

1. 45.24 ÷ 0.4 = ...

2. 36.7 ÷ 0.05 = ...

3. 1.242 ÷ 0.006 = ...

4. 1.536 ÷ 0.6 = ...

5. 245 ÷ 0.7 = ...

6. 934 ÷ 0.8 = ...

7. 65.65 ÷ 0.13 = ...

8. 1.44 ÷ 1.2 = ...

9. 45.6 ÷ 0.15 = ...

10 24.7 ÷ 2.5 = ...

11 14.297 ÷ 1.7 = ...

12 30.8 ÷ 2.8 = ...

5 If 53 x 31 = 1,643, then:

1 16.43 ÷ 31 = ...

2 1.643 ÷ 0.53 = ...

3 1,643 ÷ 3.1 = ...

4 164.3 ÷ 0.53 = ...

5 164.3 ÷ 3.1 = ...

6 16.43 ÷ 5.3 = ...

7 1.643 ÷ 0.31 = ...

8 1643 ÷ 5.3 = ...

9 3.1 X 5.3 = ...

10 31 X 0.53 = ...

11 31 X 5.3 = ...

12 0.31 X 5.3 = ...

13 3.1 X 53 = ...

14 3.1 X 0.53 = ...

15 0.31 X 53 = ...

16 31 X 53 = ...

6 Compare using (<, = or >):

1 2.5 ÷ 0.5 ◯ 25 ÷ 5

2 0.45 ÷ 9 ◯ 45 ÷ 0.9

3 30 ÷ 1.5 ◯ 3 ÷ 15

4 3.6 ÷ 1.2 ◯ 0.36 ÷ 0.12

5 48 ÷ 0.8 ◯ 4.8 ÷ 8

6 6.3 ÷ 0.9 ◯ 63 ÷ 0.9

7 1.44 ÷ 12 ◯ 14.4 ÷ 0.12

8 225 ÷ 25 ◯ 0.225 ÷ 0.25

9 2.7 ÷ 9 ◯ 0.27 ÷ 9

10 5 ÷ 0.8 ◯ 50 ÷ 8

7 Answer the following:

1. Rashida saved 350 pounds to buy a toy car. She was saving 12.5 pounds for every day she did some simple work. How many days did she have to work to save enough cash to buy the toy?

   ....

2. A father divided the sum of 99 pounds equally among his five children. How many pounds does each son take?

   ....

3. Mona bought 9 meters of fabric, and paid 214.2 pounds. What is the price of one meter of fabric?

   ....

4. If the profits of a shop are 728 pounds, and these profits are to be distributed equally among 5 persons, what is the share of one person?

   ....

5. A car consumed 210 liters of gasoline in 4 months. What is the average gasoline that the car consumed in one month?

   ....

6. Bilal buys 6 bags of fruits, each bag contains 4.25 kg. He wants to give some fruits to two of his friends. What is the weight of the fruits that each friend takes?

   ....

   ....

7. Maha walked 3,000 meters every day for two weeks, the following week she walked 14 kilometers.
   How many kilometers did she walk during those three weeks?

   ....

   ....

   ....

8. Sarah bought 20 kilograms of sugar. If she uses 4.5 kilograms to make the drinks and distributes the rest among 5 bags equally, how many kilograms of sugar are in each bag?

   ....

   ....

Assessment on Lessons 14–17

First: Use the standard algorithm to divide:

1. 17.4 ÷ 0.6 = ...
2. 93.1 ÷ 0.7 = ...
3. 8 ÷ 0.32 = ...

Second: If 434 X 12 = 5,208, then:

1. 520.8 ÷ 0.12 = ...
2. 52.08 ÷ 0.12 = ...
3. 5.208 ÷ 0.12 = ...
4. 5,208 ÷ 0.12 = ...
5. 52.08 ÷ 12 = ...
6. 520.8 ÷ 43.4 = ...
7. 52.08 ÷ 43.4 = ...
8. 5.208 ÷ 0.434 = ...
9. 5,208 ÷ 43.4 = ...
10. 5.208 ÷ 434 = ...

Third: Match:

1. 12.25 ÷ 2.5
2. 122.5 ÷ 2.5
3. 1.225 ÷ 2.5
4. 1,225 ÷ 2.5
5. 12,250 ÷ 2.5

a. 12.25 ÷ 0.25
b. 1.225 ÷ 0.25
c. 1,225 ÷ 0.25
d. 12.25 ÷ 25
e. 12,250 ÷ 25

Fourth: Answer the following:

The mass of a package of cake is 0.08 kilogram heavier than the mass of a package of cookies. The mass of 6 packages of cake is the same as the mass of 9 packages of cookies. Label your answers.

What is the mass of a **single** package of cookies?

What is the mass of a **single** package of cake?

....

....

....

Assessment on Concept 2

First: Choose the correct answer:

1. .... liter = 45 milliliters.
   (a) 0.045 (b) 45,000 (c) 0.45 (d) 4.500
2. 3 Tenths ÷ 5 Hundredths = ...
   (a) 15 (b) 6 (c) 0.015 (d) 0.06
3. 24.7 ÷ .... = 0.247
   (a) 0.01 (b) 0.1 (c) 10 (d) 100
4. 9.6 ÷ 0.1 = ...
   (a) 9.6 X 0.1 (b) 96 X 0.1 (c) 96 X 10 (d) 9.6 X 10
5. 0.001 X .... = 0.25 ÷ 10
   (a) 0.25 (b) 2.5 (c) 25 (d) 250

Second: Complete the following:

1. 75.03 ÷ .... = 750.3
2. 18,000 ÷ 100 = ...
3. 18 X 0.01 = 18 ÷ ....
4. 45.36 cm = ... mm.
5. If 2.5 X 1.2 = 3, then 3 ÷ 25 = ...

Third: Match:

1. 25 X 0.1	(a) 2.5 ÷ 10
2. 2.5 X 0.1	(b) 2.5 ÷ 0.1
3. 2.5 X 0.01	(c) 0.25 ÷ 0.1
4. 2.5 X 10	(d) 0.25 ÷ 10

Fourth: Answer the following:

A factory for the manufacture of pasta produces **832.5** kg of pasta daily, which are packed in bags of **450** grams per bag. Find the number of bags needed for this.

....

....

....

Unit 6

Concept

Numerical Expressions and Patterns

6.1 | Evaluating Numerical Expressions

Exercises on Lessons 1 - 4

Numerical Expressions, Numerical Expressions with Grouping Symbols, Placing Grouping Symbols & Writing Expressions to Represent Scenarios

1 Use the order of operations to evaluate each expression, one step at a time:

1 $1.5 + 2.5 + 0.7$ = ... = ... = ...	2 $9.8 - 2.6 - 1.3$ = ... = ... = ...	3 $8.01 + 7 - 10.02$ = ... = ... = ...
4 $24 - 5.5 + 4.3$ = ... = ... = ...	5 $0.2 \times 2 \times 4.2$ = ... = ... = ...	6 $4.5 \div 3 \div 0.5$ = ... = ... = ...
7 $2.5 \times 8 \div 0.5$ = ... = ... = ...	8 $4.8 \div 6 \times 0.5$ = ... = ... = ...	9 $8 \times 2.5 + 10.2$ = ... = ... = ...
10 $4.2 \times 10 - 8.2$ = ... = ... = ...	11 $7.5 + 4 \times 2.4$ = ... = ... = ...	12 $1.5 - 0.3 \times 0.3$ = ... = ... = ...
13 $4 \div 0.8 + 2.5$ = ... = ... = ...	14 $0.36 \div 0.9 - 0.4$ = ... = ... = ...	15 $4.2 + 1.6 \div 2$ = ... = ... = ...

2 Use the order of operations to evaluate each expression, one step at a time:

1. $8.5 + 5.3 + 7.7 + 3.5$
= ....
= ....
= ....

2. $25 - 8.5 - 3.2 - 6$
= ....
= ....
= ....

3. $2.5 \times 10 \times 0.3 \times 0.1$
= ....
= ....
= ....

4. $0.36 \div 0.01 \div 0.6 \div 0.3$
= ....
= ....
= ....

5. $72 \times 0.1 + 0.5 \times 10$
= ....
= ....
= ....

6. $4.5 \times 100 - 50 \times 9$
= ....
= ....
= ....

7. $12 \div 0.4 + 1.5 \div 3$
= ....
= ....
= ....

8. $3.6 \div 0.9 - 0.24 \div 8$
= ....
= ....
= ....

9. $0.6 \times 8 + 7.5 \times 10 + 0.7 \times 3$
= ....
= ....
= ....

10. $7 \times 10 - 0.7 \times 50 - 0.3 \times 10$
= ....
= ....
= ....

11. $2.4 \div 3 + 3 \div 6 + 24 \div 0.8$
= ....
= ....
= ....

12. $4.8 \div 2 + 3.5 \div 7 - 6.4 \div 8$
= ....
= ....
= ....

13. $52 + 4.5 \times 10 - 7$
= ....
= ....
= ....

14. $45 - 14 + 2.5 \times 8$
= ....
= ....
= ....

15. $15 + 4 \times 0.3 - 0.2$
= ....
= ....
= ....

16. $8 + 0.35 \div 0.5 - 0.3 \times 4$
= ....
= ....
= ....

3 Use the order of operations to evaluate each expression, one step at a time:

1. 4.2 X (10 – 9.2)
= ....
= ....
= ....
= ....

2. (7.5 – 4) X 0.1
= ....
= ....
= ....
= ....

3. (4.3 + 0.7) X 0.3
= ....
= ....
= ....
= ....

4. 4 X (5.8 + 4.2)
= ....
= ....
= ....
= ....

5. 0.36 ÷ (0.9 – 0.3)
= ....
= ....
= ....
= ....

6. (4.2 + 1.6) ÷ 2
= ....
= ....
= ....
= ....

7. 2.4 ÷ (7.8 – 7.2)
= ....
= ....
= ....
= ....

8. 16 ÷ (0.9 + 0.7)
= ....
= ....
= ....
= ....

9. (5.2 – 0.4) ÷ 6
= ....
= ....
= ....
= ....

4 Use the order of operations to evaluate each expression:

1. [0.85 X (2.7 + 7.3)] - 3.5
= ....
= ....
= ....
= ....

2. 25 + [0.5 X (4.2 – 3) - 1]
= ....
= ....
= ....
= ....

3. [(20.5 – 10) X 0.3] ÷ 0.1
= ....
= ....
= ....
= ....

4. [(0.36+1.2) ÷ (0.6+0.2)] X 5
= ....
= ....
= ....
= ....

5. 12 X [(0.1 + 0.5) X 10] ÷ 8
= ....
= ....
= ....
= ....

6. 54 ÷ [75 X 0.1 – (15÷10)]
= ....
= ....
= ....
= ....

5 Place grouping symbols (parentheses and/or brackets) in the expressions to generate the given values. Sometimes grouping symbols are not needed.

1 (The value is 5)

$0.5 \times 5.4 + 4.6$

= ....

= ....

= ....

= ....

2 (The value is 0.6)

$5.6 - 5.5 \times 6$

= ....

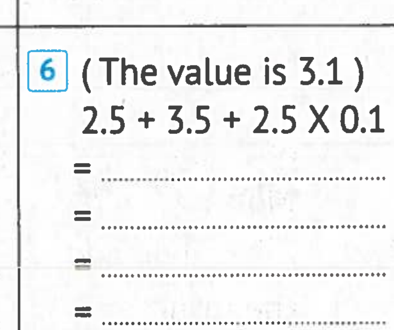
= ....

= ....

= ....

3 (The value is 9)

$4.5 \div 5 \times 10$



= ....

= ....

= ....

= ....

4 (The value is 24)

$12 \times 5.4 - 4.2 + 0.8$

= ....

= ....

= ....

= ....

5 (The value is 4)

$7.5 - 1.5 \times 3 + 1$

= ....

= ....

= ....

= ....

6 (The value is 3.1)

$2.5 + 3.5 + 2.5 \times 0.1$

= ....

= ....

= ....

= ....

6 Match:

1 $4.8 \div 0.2 \times 0.4 + 1.2$

2 $4.8 \div 0.2 \times (0.4 + 1.2)$

3 $4.8 \div (0.2 \times 0.4) + 1.2$

4 $4.8 \div [(0.2 \times 0.4) + 1.2]$

ⓐ 61.2

ⓑ 3.75

ⓒ 10.8

ⓓ 38.4

7 For each problem, write an expression that matches the clues. Then, evaluate the expression:

1 Add 5.9 and 12.6. Then multiply the result by 10.

....

....

....

....

....

2 Add 5.25 and 3.1. Then divide the result by 0.1.

....

....

....

....

....

3 Multiply 0.542 by 100 and add 2.5.

....

....

....

....

4 Divide 456 by 10 and add 4.4.

....

....

....

....

5 Divide 93 by 0.3. Then add 114.7 and divide the result by 5.

....

....

....

6 Add 30.5, 5.5, and 4. Then subtract the result from 125.5 and finally multiply by 100.

....

....

....

7 Multiply 7.6 by 100. Next subtract 34.3. Then add 12.4. Finally divide the result by 0.1.

....

....

....

8 Divide 4.5 by 0.1. Then add 5.5. Multiply by 10.

....

....

....

....

8 Answer the following:

1 Adel bought 16.5 kg of apple. He gave 1.5 kg of them to his family and wants to give the rest to 5 of his friends. How many kilograms would each friend get if he divided it equally among them?

....

2 Maha walked 2.5 kilometers every day for two weeks. The following week, she walked 54.2 km. How many kilometers did she walk during those three weeks?

....

3 Bilal bought 6 bags of balloons. Each bag contains 12 balloons. He wants to give balloons to his friends at his birthday party. If he has 8 friends at the party, how many balloons will each friend take?

....

Assessment on Concept 1

First: **Choose the correct answer:**

1. $4.5 + 35 \times 0.1 =$ ....
   - (a) 8
   - (b) 3.95
   - (c) 0.8
   - (d) 39.5
2. $1.2 \times (0.3 + 0.2) =$ ....
   - (a) 0.56
   - (b) 0.6
   - (c) 6
   - (d) 5.6
3. The mathematical expression that expresses "Add 3.5 and 3.7. Then multiply by 0.8" is ....
   - (a) $3.5 + 3.7 \times 0.8$
   - (b) $(3.5 + 3.7) \times 0.8$
   - (c) $3.5 + (3.7 \times 0.8)$
   - (d) $3.5 \times 3.7 + 0.8$
4. The mathematical expression " $4.5 - 0.3 \div 1.2$ " is expressed as: ....
   - (a) subtract 0.3 from 4.5. Then divide by 1.2
   - (b) divide 0.3 by 1.2. Then subtract 4.5
   - (c) subtract 4.5 from 0.3. Then divide by 1.2
   - (d) divide 0.3 by 1.2. Then subtract the result from 4.5
5. $5.6 + 0.5 - 0.4 \times 1.5 =$ ....
   - (a) $6.1 - 0.6$
   - (b) $5.6 + 0.1 \times 1.5$
   - (c) $5.6 + 0.5 - 0.6$
   - (d) $6.1 - 0.4 \times 1.5$

Second: **Use the order of operations to evaluate each expression:**

1. $9.2 + 2.5 \times 4 \div 5$
   = ...
   = ...
   = ...
2. $5 \times [4.8 \div (8.4 - 7.2)]$
   = ...
   = ...
   = ...
3. $(6.7 - 2.3) \times (8.5 + 2.5)$
   = ...
   = ...
   = ...

Third: **Place grouping symbols (parentheses and/or brackets) in the expressions to generate the given values. Sometimes grouping symbols are not needed.**

1. (The value is 2.2)
   $2.5 - 3 \times 0.07 + 0.03$
   = ...
   = ...
   = ...
   = ...
2. (The value is 0.5)
   $8.5 - 3.5 \div 9.2 + 0.8$
   = ...
   = ...
   = ...
   = ...
3. (The value is 10.38)
   $6 + 0.4 \times 2 - 2.42$
   = ...
   = ...
   = ...
   = ...

Fourth: **Answer the following:**

Hoda is filling identical vases with water for flower arrangements at the florist. She starts with 15.75 liters and pours an equal amount into 16 vases. When she is finished, Hoda still has 3.75 L of water left. How much water is in each vase? Give your answer in liters. Write an expression that matches the scenario, then evaluate the expression. ....

Concept

6.2 Analyzing Numerical Patterns

Exercises on Lessons 5 - 7

Identifying Numerical Patterns, Extending and Creating Numerical Patterns & Solving Problems with Numerical Patterns

1 **Write the rule for each pattern with a variable. Then, complete the pattern by finding the missing values:**

1. 2, 5, 8, 11, 14, 17, ……………, ……………, ……………. Rule: ……………………….
2. 3, 8, 13, 18, 23, 28, ……………, ……………, ……………. Rule: ……………………….
3. 58, 54, 50, 46, 42, 38, ……………, ……………, ……………. Rule: ……………………….
4. 90, 80, 70, 60, 50, ……………, ……………, ……………. Rule: ……………………….
5. 1, 2, 4, 8, 16, 32, ……………, ……………, ……………. Rule: ……………………….
6. 1, 3, 9, 27, 81, ……………, ……………, ……………. Rule: ……………………….
7. 256, 128, 64, 32, ……………, ……………, ……………. Rule: ……………………….

2 **Write the rule for each pattern with a variable. Then, complete the pattern by finding the missing values:**

1.

Input	Output
15	…………
17	…………
21	14
25	18
…………	20

Rule: ……………………

2.

Input	Output
18	10
28	…………
…………	30
…………	40
58	50

Rule: ……………………

3.

Input	Output
5	…………
7	10
9	12
…………	14
…………	16

Rule: ……………………

4.

Input	Output
1	6
2	7
3	…………
4	…………
5	…………

Rule: ……………………

5

Input	Output
39	....
33	....
27	9
21	7
....	5
Rule:	

6

Input	Output
3	9
6	....
....	27
....	36
15	45
Rule:	

7

Input	Output
6	....
10	5
14	7
....	9
....	11
Rule:	

8

Input	Output
2	6
4	12
6	....
8	....
10	....
Rule:	

3 Use the rule shown and complete the table:

1

Input	Output
15	....
....	5
35	....
....	9
55	....
Rule: n ÷ 5	

2

Input	Output
3	....
....	27
15	....
....	72
27	....
Rule: n X 3	

3

Input	Output
....	12
....	16
....	20
....	24
....	28
Rule: n – 4	

4

Input	Output
1	....
2	....
3	....
4	....
5	....
Rule: n + 7	

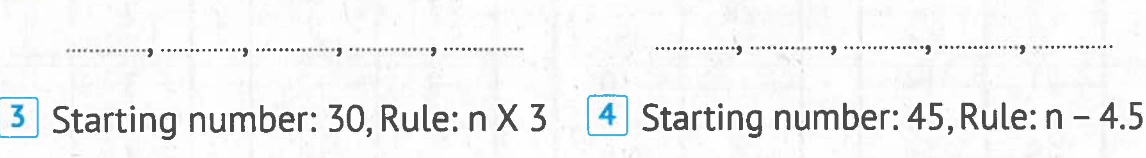
4 Using the given information, list the first five numbers in the pattern:

1 Starting number: 3, Rule: n + 5

............, ..., ..., ..., ...

2 Starting number: 1.2, Rule: n + 0.3

............, ..., ..., ..., ...



3 Starting number: 30, Rule: n X 3

............, ..., ..., ..., ...

4 Starting number: 45, Rule: n – 4.5

............, ..., ..., ..., ...



5 Starting number: 2, Rule: n x3

............, ..., ..., ..., ...

6 Starting number: 0.005, Rule: n X 10

............, ..., ..., ..., ...

7 Starting number: 32 , Rule: n ÷ 2

............, ..., ..., ..., ...

8 Starting number: 1, Rule: n ÷ 0.5

............, ..., ..., ..., ...

9 Starting number: 4, Rule: n X3 + 1

............, ..., ..., ..., ...

10 Starting number: 2, Rule: (n+1)X2

............, ..., ..., ..., ...

5 Write the rule for each pattern with a variable. Then, complete the pattern by finding the missing values:

1

Input	Output
7	....
11	....
15	4
19	5
....	6
27	7

Rule: ....

2

Input	Output
3	6
9	8
15	10
....	12
27	....
33	....

Rule: ....

3

Input	Output
1	....
2	10
3	14
4	18
....	22
....	26

Rule: ....

4

Input	Output
4	9
6	13
8	17
10	....
12	....
14	....

Rule: ....

5

Input	Output
1	....
2	....
3	27
4	64
....	125
6	216

Rule: ....

6

Input	Output
1	6
2	11
3	16
....	21
5	
6	

Rule: ....

7

Input	Output
9	....
11	4
13	5
15	6
....	7
....	8

Rule: ....

8

Input	Output
2	4
4	16
6	36
8	....
10	....
12	....

Rule: ....

6 Use a pattern to help you solve each problem:

1 When Salma was six years old, her brother Alaa was twice her age. Complete the following table and answer:

Salma's age	Alaa's age
6	....
7	....
....	16
15	....
20	....

a What is the age of Alaa when Salma is 12 years old?

....

b What is the age of Salma when Alaa was 8?

....

2 Hussam makes pancakes with sugar, he uses 150 gm of flour to make one pancake. Use the pattern to complete the table:

Number of Pancakes	Amount of Flour (gm)
1	150
2	....
3	450
4	....
5	....

a How much flour will it take to make 6 pancakes?

....

b How many pancakes does Hossam make using 1.5 kg of flour?

....

3 Fouad reads for 3 hours per day. Complete the following table and answer:

Number of Days	Number of Hours
2	....
5	....
....	21
8	....
10	....

a How many hours does Fouad read in 6 days?

....

b How many days does Fouad read for 9 hours?

....

4 Malak travels in her car at a speed of 80 km per hour. Complete the following table and answer:

Number of Hours	Distance (km)
1.5	....
2	....
....	200
3	....
....	400

a What is the distance traveled by her in 4 hours?

....

b How many hours does it take for Malak to travel 360 km?

....

Assessment on Concept 2

First: Choose the correct answer:

1. The pattern rule of (15 , 21 , 27 , 33 , 39 , 45 ,.......) is ....
   - a) n + 6
   - b) n – 6
   - c) n X 6
   - d) n ÷ 6

2. The next number in the pattern (1 , 1 , 2 , 3 , 5 , 8 , 13 ......) is ....
   - a) 42
   - b) 24
   - c) 16
   - d) 21

3. 1.5 + n is the rule of ....
   - a) 2.5 , 3.5 , 4.5 , 5.5 , 6.5 ,........
   - b) 2 , 3.5 , 5 , 6.5 , 8 ,........
   - c) 4 , 4.5 , 5 , 5.5 , 6 , 6.5 ,........
   - d) 2 , 4.5 , 7 , 9.5 , 12 , 14.5 ,........

4. The rule of the following pattern is ....

Input	Output
5	11
6	13
7	15

   - a) n X 2 + 1
   - b) (n + 1) X 2
   - c) n + 1 X 2
   - d) (n + 2) X 1

5. The rule of the following pattern is ....

Input	Output
31	10
34	11
37	12

   - a) n – 1 ÷ 3
   - b) n X 3 + 1
   - c) (n – 1) ÷ 3
   - d) n ÷ 3 – 1

Second: Using the given information, list the first five numbers in the pattern:

1. Starting number: 5, Rule: n + 5: ...., ..., ..., ..., ...
2. Starting number: 2, Rule: n X 2 – 0.5: ...., ..., ..., ..., ...

Third: Write the rule for each pattern with a variable. Then, complete the pattern by finding the missing values:

1. 3 , 8 , 13 , 18 , ..., ..., ... Rule : ....
2. 0 , 4 , 8 , 12 , ..., ..., ... Rule : ....
3. 128 , 64 , 32 , 16 , ..., ..., ... Rule : ....
4. 2 , 5 , 11 , 23 , 47 , ..., ..., ... Rule : ....

Fourth: Answer the following:

The library charges a fine on the first day of EGP 3 in case of the delay in returning the book. Another fine is charged for each additional day of 2 pounds.

If Khaled delays returning the book for three days, what is the amount that he will pay for the delay? (Indicate your answer) ....